









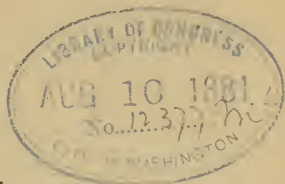


HOUSE-PAINTING,
CARRIAGE-PAINTING,
AND
GRAINING.

WHAT TO DO, AND HOW TO DO IT.

BY
JOHN W. MASURY.

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NEW YORK:
D. APPLETON AND COMPANY,
1, 3, AND 5 BOND STREET.
1881.

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TT 320
M 425

TT 305
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PREFACE.

THE use of paints throughout the older and more civilized portions of our country is almost as common as is the use of sheltering roofs and windowed dwellings. Of the chemical properties and composition of these paints as little is known—as a rule—by those whose special calling and trade it is to apply the same, as is known of the doctrines of Confucius or of Scandinavian mythology. Nor, except to gratify or satisfy a thirst for knowledge, is it necessary that the painter who applies the successive coats of paint should be acquainted with the processes whereby animal, mineral, and vegetable substances are converted into pigments; but it is a matter of prime importance that the painter and his employer both shall know what materials and what processes will bring about the best results with a given expenditure of time and money.

There are certain axioms pertaining to paints and their uses which can or may be easily learned; and which should be taken to heart by all who have houses to be painted, as well as by those whose business or occupation it is to procure, or recommend, or apply the paint.

The task of presenting this matter, so as to bring its teachings within the comprehension of all, is beset with serious difficulties. To treat a technical subject without the help of the technicalities thereto belonging, is a task the difficulties of which can be appreciated only by those who have attempted it. To make plain our meaning, the following example is offered: Speaking of the different superficial appearances produced by the various modes or processes common in house-painting, we speak of a *flat* surface in contradistinction to a glossy or shiny surface. Now, to the average reader this word *flat* has no such significance, and will not, *per se*, convey the idea sought to be impressed. To the most ignorant painter-by-trade, however, the word in question is the one of all most fit to be used. This word, so simple to the initiated, is "Greek" to the learned and unlearned alike. Addressing the educated, we make ourselves to be understood by the use of scientific terms, which convey the same ideas to all learned people, of whatever nation, or tribe, or kindred. We speak to the scholar of chloride of sodium; and the words call to his mind a wonderful combination and condensation of chlorine gas with its metallic base. Its uses he knows from every-day experience. Its composition, because he commands the language of chemical science. To the unlearned the word "salt" has no other significance than its application to culinary purposes and the preservation of viands. To the learned this simple word suggests ten thousand compounds, resulting from the chemical combination of gases and other elementary substances. Addressing an

audience so mixed and inclusive, we are at a loss to know what signs to use which shall not appear simple to the learned, and puerile and contemptible to the initiated. The learned may say : “ While confessing entire ignorance of the technicalities of your subject, we would nevertheless be taught in language suited to our scholarly comprehension. It is an insult to our intelligence to address us in terms suited to the capacity of children or the ignorant vulgar.” These remarks are made in excuse of any shortcoming in this respect, which may appear in the volume to which this is the preface. We propose to make this book entirely practical—so plain, indeed, “ that the wayfaring man, though a fool, need not err therein ” ; so comprehensive that the householder having in hand the smallest—or the largest—job of painting, may so proceed in the initiatory steps as to secure in the end the best results with the least expenditure of means. When we subject ourselves to the inconveniences of a repainting of our domiciles, with all the attendant discomforts, we ought to be assured that the result will be all that can possibly be included in the operation. We should be assured of beauty, economy, durability, and health, so far as painting can include these most desirable objects.

That there exists a desire for knowledge in the matter of house-painting, we know from the fact that our little volume entitled “ How shall we Paint ? ” and published in 1868, has passed through many editions, and is yet in demand. Experience has shown that the volume alluded to was written under a mistaken assumption. It assumed too

much knowledge on the part of the reader, and was therefore not sufficiently practical. It taught, indeed ; but it taught theories rather than processes.

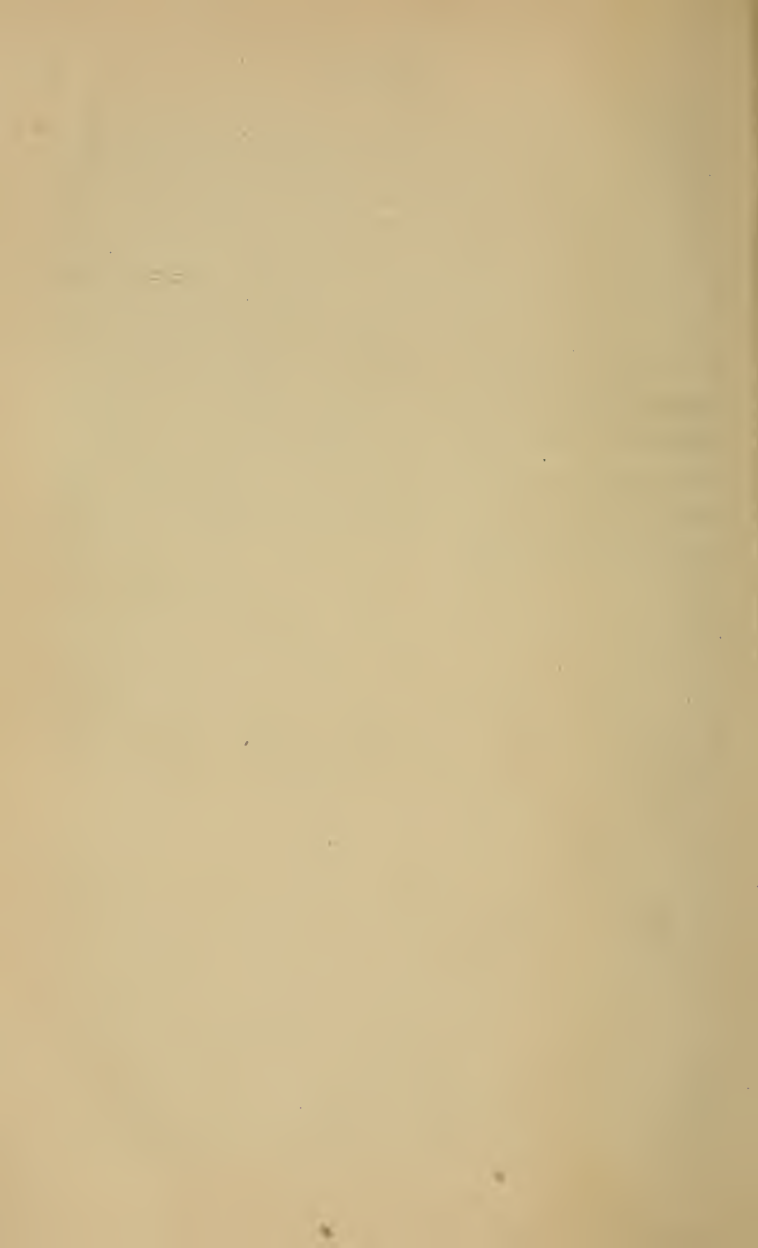
It is a misfortune that the names of colors are to such an extent arbitrary, indefinite. The employment of signs so indeterminate as are the names of colors and tints, enhances the difficulties of imparting information, and renders necessary the use of words which have too often only local meanings. The word red, for example, signifies to one mind old red sandstone ; to another, the color of bricks ; and so on, through the whole range of tones wherein the red ray of light is in any degree perceptible. The attempt will be made in the following treatise to associate the names of colors with such flowers, fruits, and other familiar objects as are supposed to present the best examples of the purest tones of the various respective colors.

The subject is one which comes home to us all, and on which, in no small degree, depend our comfort, our pleasure, and our health. If house-painting consisted of merely covering the wood-work of a dwelling with one or more coats of white paint, to speak of it as a fine art would hardly be justifiable ; but, so far is such from being the case, that, to conduct successfully the business of painting in our cities and larger towns, requires the exercise of those faculties which, in general acceptation, are supposed to distinguish the artist from the mechanic. An eye prompt by nature and education to distinguish the nice gradations of colors and tints—and the faculty so to arrange and dispose them as shall best harmonize them with each other, and

with the surroundings—are indispensable requisites in the house-painter of the present day. Happily, the day of dead whites for the interiors of our dwellings has passed by—let us hope, not to return. It was a kind of Puritanism in painting, for which there was no warrant in Nature, which, in such matters, should in a measure be our teacher and guide. But the subject must not be studied only in its æsthetic aspect ; not alone as adding beauty and comeliness to our homes ; but in its economical features, as most important in preserving wood from the action of the weather forces—in excluding dampness and arresting moldiness and decay. It is, too, highly promotive of cleanliness, which has been said by good authority to be next to godliness, and to many it affords the best outward sign of the advance of the people in the path of civilization ; for, just in proportion as the houses, fences, and out-buildings of a community are painted, will be inferred the advance of that people in wealth, literature, home comforts ; in short, all the consequences and refining influences of a high civilization. That this is true, of our own country at least, appeal is made to those who have traveled much, and have thereby acquired the experience necessary to the forming of a correct conclusion. Indeed, one feels as he leaves behind him the freshly painted houses and lattice fences of the older and more thrifty portions of our land, and finds himself surrounded by the evidences of a ruder cultivation, that this condition is owing in a greater or less degree to the absence of the house-painter and his stock of paints. A knowledge of the materials employed in the prosecution

of any trade, profession, or calling, their source, origin, nature, effects, and properties, and the mode and manner in which they are influenced by the invisible forces of Nature, ever active in the great law of change, would seem to be a necessary concomitant of success. The materials used by the painter and colorist are more directly the result of chemical research and discovery than are those of other trades and callings; and no amount of observation and study, without the assistance of written explanations, will give the clew to their composition and mode of production. The wood which the carpenter fashions into shapes of utility and beauty, bears in its grain the story of its growth. The nails which he uses are as familiar as household words, and of themselves suggest the mechanical force which fashioned them. But the materials which reflect to the eye the thousand tints and colors which the painter disposes with cunning hand give no sign of the secret of their origin. They may be simple or compound substances wrought out in Nature's vast laboratory, or the result of the highest scientific skill. The aim of the writer has been to give, in as brief a form as possible, the mode of operation in the production of the factitious pigments used in house-painting, and to explain the origin and properties of those which are of Nature's own production. There is nothing in domestic or out-door life so common, so constantly before our eyes, as painted surfaces; yet, outside the ranks of those who profess the art of painting, there prevails a general ignorance of the nature and composition of paints, and of the proper and economical use of the same. Owing to what

the writer must call a defect in our system of education, not only in our common schools, but in the higher institutions of learning, no effort is made to educate the perceptive faculties in the discrimination of colors, or in their harmonious combination and arrangement. Such teaching is certainly worthy the attention of those to whom we commit the instruction of our children, and the neglect of it is a national misfortune. Hoping to create an interest in this important subject, the writer is induced to offer this little book to the public, and would modestly commend it not only to the trade, but also to the general reader, with the belief that there are but few who may not find some instruction in its pages.



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HOUSE-PAINTING, CARRIAGE-PAINTING, AND GRAINING.

CHAPTER I.

COLORS AND THEIR USES.

THE use of colors for decorative and ornamental purposes antedates written history, and they were possibly employed by aboriginal man in or for the adornment of his person. To trace the progress of this fine art from its incipency were an impossible task, because of the non-existence of historic records. Milton, the blind poet, with fine poetic frenzy, describes the gorgeous flower mosaics which glorified the nuptial bower in Eden's garden. So-called sacred books—according to Moses—tell us that long ago Tyre was famed among the nations of the earth for the skill of her workmen in gold and colors and broidery ; and that Hiram, the King of Tyre, did send to Solomon, the new-made King of Israel (even as beforetime he had sent to David cedar wood, or trees, whereof and wherewith the said David did build him a dwelling-house), a son of a woman of the

daughters of Dan, whose father was a Tyrian man, skillful in decorating in gold and silver and brass and iron, and in crimson and purple and gold, as also in embroidery and in fine linen. An accomplished artist was this man of Tyre!

We may suppose that during the earlier period of man's development the employment of color for decorative and ornamental purposes was confined mostly to the temples of worship and to the palaces and tombs of kings; and, moreover, that colors had a significance beyond mere harmonious arrangement, and were used emblematically in the Egyptian, Jewish, and other pagan modes of worship. The enduring materials which monumentally record the glory of Egyptian civilization were, we suppose, colored to symbolize the mysteries of their strange and, to us, incomprehensible religion. And so through—as we know them—all succeeding forms and changes and religious inventions, until the use of color for sacred and sacerdotal purposes seemed to have attained its highest reach with the culminating temporal power of the Romish Church. We may suppose that there was a period in man's history when the average mind was educated in a knowledge of color-harmony. We know there was and is a time where in our civilization there exists an almost entire ignorance of and indifference to this subject, and a prevailing inability to discern harmony and distinguish discords in compositions of color.

The protest of Luther and his compeers against what they deemed errors in the Church, included more than the diversion of a portion of the religious thought of the so-

called Christian world from the channel through which it had been accustomed to flow. The change in the spirit of those who followed in the footsteps of the protesters was radical and entire. The institution, founded by St. Peter, the repository of God's power on earth, the object of extremest veneration theretofore, on the part of those truly religious, who followed Luther out, became the thing abhorrent, the standing offense against the God of Abraham, the Antichrist, the devil's engine for the perversion of human souls.

All of art in painting, and sculpture, and architecture, which the Church had gathered and almost monopolized—the emblem of the cross, the Virgin Mother, the stained windows, the softened light of cathedral and minster—were become idols in the new light of Luther and his friends, and everything which savored of the Church was banished and put far away. Out of this, we may assume, grew that indisposition to, and consequent ignorance of, color-harmony, which has ever been the accompaniment of Protestant Puritanism.

Coming down to our own time, and looking back to the Massachusetts Bay Colony, we may find the cause of our own want of taste and our indifference to the use of colors for decorative and ornamental purposes. The rigid teachings of the semi-theocracy of the Puritan Commonwealth were far-reaching in extent, wonderful in influence, and are most difficult to trace. They crop out to-day among all the forms and features of our diversified society and civilization. Modified by the influx of immigration, by

ever-increasing contact with the world, by accumulation of wealth and its consequent refinement and luxurious tendencies, they yet bear more or less of the rigidity and severity of their original features. To these teachings may be traced the entire indifference to the use of colors for decorative and ornamental purposes, and the inability to distinguish color-harmony, which has heretofore universally prevailed, and which may be said now generally to prevail, among us as a people. With those Puritan Fathers a knowledge of the simple names of colors was a frivolity, if not a sin, and the use of colors for church purposes would have been looked upon as a crime little less heinous than image-worship. Scarlet with them was significant of the "woman of Babylon"—she who sat upon the seven hills, drunken with the blood of saints. Purple suggested pagan idolatry, and red the right hand of wrath! Colors, either as ornaments or emblems, could have no place in their purely intellectual and ideal faith. To have rendered their places of worship attractive by ornamentation would have given the lie to their whole profession. The rigid morality of those God-fearing ascetics found proper and fitting expression in the rectangular shelters, under the wooden roofs of which they assembled to worship "in spirit and in truth," so far as they were conscious of their own spiritual impulses. May we not rejoice that the materials which architecturally symbolized the simplicity of their religion were not enduring as monumental brass or marble? In tracing backward the cause of our want of taste and our indifference to the use of colors, it seems not necessary to

go beyond the period of that settlement and that civilization which has given the key-note to the moral and intellectual tone of succeeding generations.

Be it a matter to deplore, or to rejoice at, it is not to be denied that Puritanism, as a system, with its severe morals and its simple tastes, has become a thing of the past. We find ourselves now upon the other road. The paintless structures which were the vanity of our severe predecessors, gave place to the diluted Puritanism of white and green. Let us congratulate ourselves that the latter discordant combination has run its course, and has given place to a disposition, at least, to color the exteriors of our dwelling-places with some regard to harmony and the general fitness of things. Encouraging as is the partial recovery from the white-and-green mania, there is much yet to be done in educating the people as to what colors and tones of color, what tints and shades, may properly be displayed in the coloristic decoration of domestic architecture.

CHAPTER II.

LIGHT AND COLOR.

COLOR is an attribute of light. In other phrase, color belongs to light, and in the absence of light all objects are black. The mind becomes conscious of color because of the eye, and without that organ there can be no intelligent comprehension of the sensation which color causes. To assert that light was made for the eye, or that the eye was made for light, might possibly give rise to cavil ; but the ultra-caviler will hardly deny the adaptability of each to the other.

As no two material objects can occupy the same space at the same time, so no two persons can view the same object under exactly similar conditions at the same moment ; and it is doubtful if an object is ever seen twice by any one beholder under exactly like conditions of time, place, and circumstance. This construction may cause us to take a charitable view of many differences of opinion as to the merits or demerits of works of art or of impressions produced by natural phenomena, which would otherwise be

charged to stubbornness, or captiousness, or perhaps to willful blindness. This diversity, however, must not lead us to the conclusion that we can arrive at no positive knowledge of the effects produced on the general mind by certain combinations and contrasts of colors and of light and shade. Notwithstanding the fact that the visual organs of many people are so imperfect that the possessors can not distinguish green from red, it can not reasonably be denied that the sensation produced by the sight of these colors is, as a rule, identical among all whose perceptive faculties are ordinarily susceptible to color impressions. Chevreul, in his work on "*Laws of Contrast of Colors*" (page 198, English translation), says: "As soon as I felt the necessity of this study, my first care was to discover whether I saw colors as the generality of persons see them. I was soon perfectly convinced that I did." This, it will be seen, was a very important matter about which to come to a decision, for the reason that time spent in teaching the laws which govern color contrasts, and discords and harmony, would be worse than wasted if, in such matters, every man was to be "a law unto himself." There have been, and are, and always will be, perhaps, individuals who claim that in all questions of taste there is no room for dispute, and that in such matters nobody has the right or the calling to propound laws for others. Such protesters are, fortunately, not the rule but the exception, and the fact still remains that the generality of persons see colors as Chevreul says he saw them. Upon this assumption, laws have been propounded, from time to time, which are supposed to be in

accordance with Nature's requirements in the disposition of colors in coloristic decoration and ornamentation.

In treating the question of color-harmony, formidable difficulties are met with, and are hard to overcome, for the reason that all the natural laws relating thereto are so altered and modified by conditions and circumstances that they become liable to endless interpretations. It is a fixed and arbitrary natural law in color-harmony that gold harmonizes with and is pleasing to the eye in combination or contrast with all colors and tints positive and neutral. Not equally so with all : gold is better with scarlet, or crimson, or purple, than with olive-green or greenish-drab, but it can not be made to discord with any color. Proportion and place, too, are powerful influences in the combination of colors : a color used in a composition in certain proportions will be disagreeable, and decrease the good effect of all ; whereas, had the same color been in proper proportion to its neighbors, it would have heightened the good effect of all. So much, indeed, depends upon proportion, that disagreeable results will follow from any offense against these conditions. Rules may be given for putting together certain colors, so as to produce harmony and avoid discords, but no rule can be given for the relative proportions which these colors must bear to each other. A few general rules, indeed, may be laid down, such as follow : With blue and white, the white should be in excess, as a white ground with blue spots would have a more pleasing effect than a blue ground with white spots. So with red and white ; the white should be in excess, and the remarks as to blue and white

are equally pertinent as to red and white. Blue and red and yellow make perfect harmony in combination ; yet they are not as pleasing when the yellow shows in the same quantity as the other colors. When these colors are presented together, the blue should be first in quantity, the red next, and lastly the yellow. Of course, it is difficult to determine the exact quantity of each, and hence arises the hopelessness of the task of educating one in this art whose perceptive faculties are naturally deficient in this most important requirement ; and one may almost as well be color-blind as to be without the ability to distinguish intuitively what are and what are not proper proportions. Few persons are color-blind to the extent of not experiencing the disagreeable effect of placing side by side, in direct contact, alternate stripes of red and green, or olive-green and brown. But this is not all that is required. Discords in two colors may be changed to concords by the addition of a third ; or, a discord—in two colors which can not be made to harmonize—may be toned down and rendered less disagreeable by the introduction of a third ; but, when and where and how this may be done, can not be taught by written rules, from the fact that the eye can not be educated in color-harmony through the ear, any better than the latter organ can be taught harmony of sounds through the medium of the eye. We say a black next a green, or between red and green, becomes dull and rusty, and both the other colors lose by the arrangement. Introduce a white or yellow next the black, and it at once shows its own color. Such rules as these, however, can not prop-

erly be called instructive, for the reason that such knowledge should come by intuition ; otherwise it would seem to be of no particular value to its possessor. It is easy to say that notes three and four in the musical scale struck together give forth discordant sounds ; but to the ear which does not know this by intuition, the fact taught through written rules would be as seed sown on stony ground. The writer moralizes a little here, because he knows some reader will expect to find full and complete directions for the combination of colors in color compositions, which will be applicable under any and all conditions. As said before, this knowledge comes only through the eye by practice, and by the study of good examples.

CHAPTER III.

ORNAMENTING WITH COLORS.

IN view of the fact that the sole object in ornamenting with color is to please the eye, that organ alone must be consulted as to what is good. We have now to deal with art, not science ; with what is empirical and not what is rational. We propose to furnish rules, not reasons.

That two or more colors bear to each other certain relations, when chemically or scientifically considered, is not, of itself, a good reason why, in color ornamentation, these colors may be displayed in juxtaposition with good effect. Chemistry is interesting in this connection, not because of its processes, but its results. The theory of color is interesting, as a fact ; but it interests the intellectual, not the perceptive, faculties. A knowledge of color-harmony is intuitive, not acquired. The faculty, where it exists, may be improved by the study of good examples ; but where the natural faculty is wanting it can not be acquired. With the man who dogmatically asserts that a thing is good because it suits his taste, or want of taste, there is an end to

argument. To discuss the question of color-harmony with the stone-blind or color-blind were altogether vanity. Such have no part or lot in this matter, only to accept the rules laid down by those who possess the natural gift of distinguishing harmony in color, improved by the study of good examples.

Undue importance has been given to the place and proportion of colors as displayed in Nature ; but Nature's examples are worthy of imitation only so far as they conform to the rules of harmonious combination. To assert that the combinations and contrasts of colors as displayed in natural objects must necessarily be harmonious and pleasing to the eye, were as absurd as to declare that all natural sounds must necessarily be pleasing to the ear, or all natural odors grateful to the nostrils, or natural tastes to the palate. Again : a house, or other modern building, is not in any sense a natural object ; but, with its formal lines and angles, is artificial to the last degree ; and any attempt to give it the appearance of a natural object, by coloring it with those colors which Nature most largely displays, would be simply absurd. Nature, too, exhibits her colors and her color combinations, many of which are highly pleasing and delightful, while others are equally violent and incongruous in contrast, by the light of day ; while colors used in interior decoration are intended to have their best effect, necessarily, under subdued light, and frequently under artificial light. Now, certain colors appear very different, when viewed by artificial light, than when seen by daylight ; and, in ornamenting with colors, provision must be made for

this difference. For example : yellow light lends to red, and causes it to approach to scarlet, and crimson looks brighter than by day. Blue—that is, the darker tones of this color—loses by the absorption of too much light, and appears almost black ; and light blues and greens are apt to be confounded. Therefore, blue intended for exhibition by gaslight should be of a bright tone, and, if dark blue be indispensable, it should be lightened with white, or a brighter tone of the same.

The writer would impress most strongly the importance of a full and complete conception of the effect before taking the initial step in decorating with colors. There should be extended surfaces of a uniform tint for the eye to rest upon, and the colors used in ornamentation should be decided and contrasting. Cold gray tones and flowing lines and perspective drawing are not in harmony with the formal lines of our domestic architecture. With a true artist the work is complete before the brush is applied, even as in sculpture the ideal statue is the inspiration, the marble form the exposition only. The plastic clay, under the hands of the sculptor, enables the author to make patent his invention. So with the true artist in coloristic decoration. The colored pigments are the signs whereby others versed in the language may read his inspirations. If a design be faulty in conception, no amount of elaboration or perfectness in detail will remedy the defect. The result only is important, the process and the parts are insignificant. Undue attention to detail, and a fondness for copying natural objects and forms, show a barrenness of

invention and a sad want of appreciation of what is genuine in art.

In color ornamentation care must be taken, not only in the selection of the colors, but in the relative quantities or proportions which each shall bear to the other ; the latter requirement being almost equally important with the first.

In the house of the writer is a chamber set apart for state purposes. Its ample ceiling is ornamented in water-colors, the work of a so-called fresco-painter who possessed correct taste in color-harmony (all of them do not), and a hand most cunning and skillful in execution. This chamber becomes a common room when the invalid wife and mother is prostrated by one of those peculiar attacks which the doctors say require in curative treatment that the body must lie supinely. This position would of course bring the ceiling in the direct scope of the patient's vision. My reader will, if he can, imagine the satisfaction of the writer and his gratitude toward the artist when the patient sufferer exclaimed, in a period of convalescence : " Oh, what a luxury to be sick in this room ! How many hours of dull pain have been brightened and made endurable by the delicacy of those lines and the sweet harmonies of those color blendings and contrasts—those exquisite shadings, which keep the mind ever in a pleasant doubt as to whether the figures be the work of the pencil or the chisel ! In all the many hours of my painful illness this ceiling has been an unfailing source of joy, and I have come to know how beautiful it is only by studying its lines and tracings and colors a thousand and a thousand times again ! It has

made more than tolerable the otherwise weary hours of my past sickness, and robs the anticipated future hours of illness of half their terrors."

Think of this in comparison with cold, plain ceilings in Puritan whiteness! "Oh, what a luxury to be sick in such a room!" Is there any medicament, any sirup of drowsy poppy or mandragora, to challenge comparison in healing power with the work of the artist-painter? The great terror, in bodily sickness which prostrates, is the want of mental occupation. Given agreeable mental occupation, and bodily prostration becomes easy to bear.

Suppose a case. Reading of books is for sanitary reasons, or in the nature of things, forbidden. The exercise of the industrial faculties is equally out of the question; the great Desert of Sahara does not suggest so fearful a blank as protracted sickness under such circumstances; and where look for hope? Reading is forbidden; employment of the industrial faculties is out of the question; music and mirth are not in harmony with the sick-chamber. Where look for hope? Kind reader, the Bountiful Giver has bestowed on us perceptive faculties, and color whereupon to exercise those faculties. Therein lies hope! There is not a shadow of doubt in the mind of the writer that many of the dreary hours of sick-room existence may be rendered hours of joy; that the long, long, weary days—those days of mental and physical inanition, the very recollection of which one would for ever blot from memory—may be made pleasant recollections by a simple display of color, harmonious in tints and proportions. But the design of

work must not be intrusted to eyes which see not, nor its execution to unskilled hands. To produce good results, even in so small a matter as the coloring of a sleeping-room, requires the pencil of an artist just as certainly as did those productions of the great masters, Titian and Tintoret, which enchant the world. But let us not forget that these same colors, so powerful for good, are not impotent for evil ; and that we may, “according as we build,” from our painted ceiling, call down curses as from the brow of Ebal, rather than blessings from the heights of Gerizim.

Exaggerated outlines, fanciful drawings, wreaths, flowers, vines, and all imitations of natural objects, must be strictly avoided. The figures must be purely conventional, and so severely simple that they can not, by the aid of a dis-tempered fancy, take on shapes either grotesque or horrible, thereby converting our sick-room into a “chamber of horrors.” Faces, portraits, Cupids, nor dancing-girls, should look down upon us from ceilings in domestic architecture. They are as much out of place there as they would be on the carpet : they are certain to be upside down, or standing on their heads, when we view them, and a sick person has not strength of mind sufficient to set them right. Bouquets, vines, and other imitations of natural objects, are not good, because they cease to interest when they cease to be objects of wonder or curiosity. However beautiful at first sight, they are in the nature of things inferior to the objects they are intended to imitate, and, what is of most importance, entirely out of place. There can be no sentiment in a painted bunch of flowers on a ceiling, however fault-

less the drawing and coloring may be ; and such objects soon become matters of indifference or disgust. On the contrary, purely conventional designs and figures—the same being artistically drawn, and kept subservient to the main object, which is the display of colors—always present themselves with a fresh charm, and seem never to lose their attractiveness. In tracing the lines and curves, the shadings and contrasts, the mind finds agreeable and pleasant occupation when by sickness it is deprived of its usual resources. It will hardly be claimed by the most enthusiastic devotee of realistic art that the copying of natural objects or imitations of nature gives room for play of the imagination, or that such art has the remotest connection with inspiration. No work of art can move the beholder with any sentiment which did not necessarily belong to its conception or production. None will deny that the drawing of purely conventional forms and figures affords good scope for the imagination, and for the display of true artistic taste. Therefore, the artist who, with real artistic fervor, changes the dead level of a plain white ceiling into a “thing of beauty,” is practicing art in the better sense of the word, and is reaching out toward its highest significance.

This digression is made as a protest against the growing disposition of the times, which seems to be to elevate horse-painting and cow-painting above art as practiced by the masters above named. Landscape and cattle painting, and flower and insect painting, and rabbits and rats and Guinea-pigs and ducks and ducklings, and chanticleer with all his

cackling harem, though given on canvas more natural than life, only serve to show how expert and skillful men may become in copying natural forms and imitating natural objects. Talent of this kind of a high order is certainly respectable, and such a display of skill is truly wonderful ; but the practice of it does not necessarily include inspiration, invention, or genius, without which fine art can not be said to exist.

CHAPTER IV.

PAINTS : THEIR ORIGIN AND SOURCES.

THE mineral kingdom yields the great bulk of pigments used in plain and decorative house-painting. Native paints are found, in certain geological formations, in inexhaustible and boundless supply.

These are generally neutral tints or shades, being mostly silica colored with iron oxides. They are useful and durable both in color and substance, and as a rule are not as liable to change as are the colors produced by chemical agency. The animal kingdom furnishes the bright scarlet known as carmine, and crimson and purple lakes, as also Prussian and Antwerp blues.

Colors extracted from vegetable substances have been mostly discarded in painting, by reason of their fugitive character. Among those retained are the madder-colors, indigo, and gamboge. The important pigment lampblack is also classed among vegetable colors.

All the metals yield pigments of some sort.

Lead yields white-lead, and other whites of similar nature and composition, distinguished by various names, as

silver-white, Krem's white, China white, etc. ; also orange mineral, red oxide, called red-lead, and the gray oxide, called litharge.

Zinc furnishes the beautiful paint known as zinc-white.

Copper gives verdigris, and, in combination with arsenic, the unrivaled green known as Paris or emerald green—for a comprehensive and detailed description of which see Chapter XI, entitled “Paris Green as a Pigment.”

Iron furnishes Indian red, Mars brown, Mars orange and yellow, and Venetian red. Mercury produces in combination with sulphur what is known as true vermilion.

Arsenicum supplies King's yellow and orpiment. Cobalt-blue and smalt are made from the metal cobalt, and the recently-found metals, such as uranium, cadmium, molybdenum, etc., produce colors of peculiar beauty and brilliancy.

White-lead, the comprehensive term for white pigments, for ages the only substance which includes all the qualities or properties required by the painter, is an oxide of that familiar metal, lead, more popularly known, perhaps, than any except iron. The metal, liquefied by heat, is run into molds forming a circle or ring, with bars across something like a round gridiron ; the object being to present as much surface as possible, conformably to certain other requirements. These shapes—buckles, as they are technically called—are exposed some weeks, more or less, in covered earthen pots, to the action of vinegar, or other acetic acid, volatilized by gentle heat. Through the action of this vaporized acid, the metal gradually loses its metallic struct-

ure and character, and takes on the appearance of a whitish, friable substance, which is chemically known as carbonate of lead. This, after being washed and crushed, and ground in oil, is the white-lead paint of the painter. The other white pigment (white oxide of zinc) is produced as follows : The ores, crushed to the size of coarse sand, and mixed with fine coal, are spread on the fire, and, when raised to 2,000° Fahrenheit, are deoxidized ; the oxygen of the ore uniting with the coal, forming carbonic-acid gas, the zinc rising as a metallic vapor. The vapor and gases are sucked from the furnace, and conveyed through iron pipes to a large room into which they are driven, and out of which the gas escapes. This room is filled with large, stout bags, suspended open-mouthed to catch the zinc, which, in its passage from the furnace to the bags, goes through chambers into which air is admitted. In its vaporous form it unites with the oxygen of the atmosphere, forming the light, flaky substance known as flowers of zinc. The oxide at this stage is extremely light, thirty or forty pounds being sufficient to fill a barrel. It is then compressed to about one fourth of its former bulk, and packed in barrels of two hundred pounds or casks of four hundred pounds, and sold to manufacturers whose business it is to prepare the same, by mixing and grinding in oil, for the use of the painter.

Lampblack, drop-black, ivory-black, bone-black, Frankfort black, are the names applied to the simple substance which affords all the blacks used in painting, and in the manufacture of printer's ink, viz., carbon. Lampblack, the most important and useful form of carbon to be considered

here, is produced from the article known in trade as common rosin, or other bituminous substances. The finer kinds are made from rosin, and the common kinds from coal or gas tar. All resinous, oily, fatty substances produce lamp-black in the process of burning; it being simply the soot resulting from highly combustible bodies as they are imperfectly consumed.

CHAPTER V.

MIXING PAINTS AND COLORS.

THIS would seem a facile subject about which to write ; and so it would be, if the names of colors carried with them to every mind the same significance ; but these names are so indeterminate, and convey to the individual hearer, or reader, such entirely differing sensations, that we confess to not a little misgiving as to our ability to so present the subject as to make it fairly intelligible.

We proposed in the preface to connect the names of the colors with some familiar and well-known specimens of flowers or fruits as examples. This is no easy task, nor does it help us altogether out of our difficulty ; for the reason that flowers, particularly those in a state of domestication, present such a variety of tones of the same color under varying conditions and circumstances.

Another difficulty which presents itself is the wrong, or rather false impressions, existing in the minds of many, maybe a majority, as to the exact meaning which attaches to the names of colors. When we speak of a triangle, every hearer traces on the tablet of his mind a figure

having three sides and three corners. When, however, we speak of yellow, the word conveys to the mind of each individual hearer possibly a different sensation. One, hearing the sound of the name, will see, in mental vision, yellow-brown stone; another, the pale hue of the primrose; another, the deep yellow of the marigold; and so on through the whole range of the almost endless tones and hues of that color.

It is easy to say, blue and yellow commingled produce green. Yet if the yellow be the color of yellow-brown stone, and the blue a red-purple, or violet, or indigo, the resulting color will not give to the eye a pure green. Therefore, when in our color nomenclature we use the word yellow, we would photograph on the mind the reflected color of the buttercup; not the pale tint of the primrose, not the color of the orange or the lemon. In all the world of flowers, this is the most pertinent example we can offer of a pure yellow; for the reason, if there were none other, that it is the most familiar. Thus we have for comparison a familiar example, well known to young and old, easily remembered, and presenting in different localities the same color.

With blue the case is altogether different, and the difficulties are almost insurmountable, for the reason that the floral kingdom—so far as the writer's observation has extended—presents no example of a pure blue; and herein we may accuse Nature of being very niggardly, in view of the lavish abundance of yellows, purples, crimsons, and scarlets, the purples particularly being of gorgeous richness

and purity. The flax-flower among blossoms is the best we have to offer. The poet tells us :

“Deep in the wave is a coral grove,
Where the purple-mullet and gold-fish rove;
Where the sea-flower spreads her leaves of blue,
That never are wet with the falling dew.”

Yet, however blue the sea-flower may be, we can not present it as a familiar example of a pure blue color. We have in the sky—outside the world, so to speak—the only example of pure blue which the eye of man has ever beheld or ever will probably behold. The reader must not mistake in supposing the sky will at any and all times, and in every part of the vaulted arch, offer for his delectation this heavenly azure. It is never seen in a winter sky in our latitude, and in summer only under (over, perhaps, would be the better word) peculiar conditions. It is not seen in a calm nor in a storm ; never in a south wind or an east wind, or when the wind is from the north, for the reason that with none of these winds do we see the sky glorified with those passing, fleecy clouds, with sharply defined outlines, which are indispensable in the exhibition of heaven's own blue. If the reader would revel in the joy born of the sight of this color in all its purity, let him watch and wait, for 'tis a rare spectacle, and only shown when all the conditions are favorable, and Nature in her best mood. These conditions are as follows : A day in the country, following an afternoon or evening summer thunder-storm, clearing up during the night, and ushered in by sunrise in an unclouded sky and

a brisk west or northwest wind. Early' in the forenoon large masses of fleecy clouds, with clearly cut, sharp outlines, will chase each other across the face of the sky. Then, by close watching, may be seen in the zenith, surrounded by those creamy white cloud-masses, a patch of pure blue color, suggesting to the pious mind heaven's own gateway.

As before said, the flax-flower is the best example we can offer, out of the endless variety of the floral world, to convey the idea of what we mean when we speak of blue, the third and last of the primary colors as seen in the spectrum.

Red, the first of the primary colors, is that pure red color which is neither scarlet nor crimson, and Nature offers but few specimens of it ; indeed, she has confined the use of this most pleasing of all colors to old and young, to the painting of the petals of flowers, the tempting hues of luscious fruits, and the gorgeous plumage of tropical birds. Nowhere is it to be seen in the sky, except in rare sunsets, in the water, or in the earth ; and in the general landscape so small is its proportion, compared with the other primary colors, that it may be said to have no place there. The difficulty in obtaining a pure red is, that the slightest reflection of the yellow ray changes it to scarlet, and the most infinitesimal commingling of blue to crimson. So with pure blue : the faintest suspicion of yellow makes of it a blue-green, and the slightest show of red changes it to purple. We suggest the red Dutch currant as the best familiar example of pure red color, because of its common

occurrence in temperate climates, and because no better familiar example is offered.

We seem now to have a point of departure—not the best, perhaps, but certainly much better than none ; because, when we speak of red after this disquisition, we shall be understood to mean the color of the ripe currant, and not old red sandstone. The name of yellow will suggest the color of the buttercup, not the yellowish-brown of the ochre pigments ; and blue will call to mind the color of heaven. The teaching of the practice of the art of compounding colored pigments will be looked for in the succeeding chapter.

CHAPTER VI.

MIXING PAINTS AND COLORS.—(CONTINUED.)

BEGINNING with the primary colors, we say :

Red with yellow, commingled in varying proportions, produces scarlet, orange, and orange-yellow, in infinitude of tones ; and these are termed secondary colors.

Red with blue gives the whole range of crimsons and purples, according as the amount of blue is varied.

Yellow with blue gives all the tones of blue and yellow green, as the blue or yellow in the mixture predominates. These secondary colors will be pure in tone just in degree as the primaries of which they are compounded are pure.

The other secondary color, pure gray, is derived from the extreme colors, black and white. It is a cold, entirely neutral tint or shade, and will be pure just in proportion as the black is intensely black and the white purely white.

Red with gray gives first a warm gray, until the continued adding of red carries the color out of the range of grays into brown, and this color so produced would be called warm brown.

Yellow with gray gives a yellow gray with a tinge of green.

Blue with gray gives a cold blue gray.

Blue and red with gray produce a nice tint, called French gray, and will be dark or light in proportion to the quantity of white present in the mixture, and will be warm or cold as the red or blue predominates.

Red tinted with white gives pink.

Blue with white gives pale blue of any desired tone.

Yellow with white gives all the intermediate tints between the lightest, palest straw-color to pure yellow, and, with a slight addition of red, cream-color.

Red with black or deep purple, indigo-color, gives the darkest brown, and will be warm in proportion as it reflects the red ray.

Red with black or purple, and white, produces brown-stone color, and a little yellow added makes the mixture a better imitation of this popular building-stone.

Black or purple, with white and yellow, give all the olive-greens.

Black and red and yellow with white, give all the extensive range of drabs, as also fawn-color.

Black, in mixture, carries all the colors—primary, secondary, and tertiary—into the range of browns or olive-greens.

Green tinted with white gives apple-green of various tones.

This seems to include all that can be said instructively as to the mixing of colored paints for the production of the

possible derivatives from the primary colors and the extreme colors, black and white. Below we give the same in a condensed form, for easier reference :

Scarlet is derived from red with yellow.

Orange is derived from red with yellow.

Orange-yellow is derived from red with yellow.

Crimson is derived from red with blue.

Red crimson is derived from red with blue.

Blue crimson is derived from red with blue.

Purple is derived from blue with red.

Red purple is derived from blue with red.

Blue purple is derived from blue with red.

Pink is derived from white with red.

Pure gray is derived from white with black.

French gray is derived from white, with red and black.

Blue gray is derived from white with black or blue, and red.

Warm gray is derived from white, with black or blue, and red, with preponderance of red.

Green is derived from blue with yellow.

Olive-green is derived from blue with yellow and black.

Apple-green is derived from green and white.

Silk-green is derived from green and white.

Pale blue is derived from white and blue.

Pure brown is derived from black and red.

Red brown is derived from red and black.

Brown-stone is derived from red and black and yellow and white.

Drab and fawn color are derived from red and white and black and yellow.

Buff is derived from white and orange-yellow.

Cream is derived from white and orange-yellow.

Corn-color is derived from white and orange-yellow.

Maroon is derived from red and purple and black.

Chestnut is derived from red and yellow and black.

Cuir-color is derived from white and yellow and black.

Tawny color is derived from white and yellow and black.

We would, from choice, present examples of these tints and broken colors directly to the visual organs of the reader, but it is quite impracticable in a work of this kind, however desirable it may seem. Continuing this subject further, instructively, we present some facts which may prove valuable to one who may choose to mix colored pigments for his own profit or pleasure. The colors now employed in exterior house-painting being mostly neutral tints—with a bit of positive color shown on the molds and trimmings, according to taste or fancy, as drabs, grays, and fawn-colors—it follows, if a material can be found which in itself includes the colors necessary to produce any desired tint in the way of drabs or fawn-colors, to obtain such would be in the direction of economy; a saving both in time and material. Therefore, we would suggest, in such case, the employment of that very useful pigment known in the trade as umber. This is presented in two forms: first, as crude or native umber, called raw Turkey umber; and also as burnt umber—the native umber roasted—which process causes it to take on a very rich, deep brown. These pig-

ments, used in the production of any tint of drab or fawn-color, are the equivalent of black and red and yellow, and will give clearer tints than can ordinarily be produced by the last-named colors. Burnt Turkey umber will give (mixed with white-lead or zinc-white) any desired tint in the way of warm drabs, and raw umber will give any desired shade of yellowish drab. The only caution necessary is care lest too much of the color may be used, the result of which would be a tint darker than might be wanted. In these days, when colored paints are offered of almost every possible tone and tint and shade suitable for use in house-painting, there would seem to be no good reason why a householder should subject himself to the trouble and expense of mixing his own colors, especially as a card showing these colored pigments is presented, wherefrom he may select such color as taste or inclination may dictate.

Notwithstanding all these conveniences, it is possible—maybe probable—that some inquiring reader will prefer to make his own color, and look here to learn how to do it. To give rules for the production of every color, hue, tint, or shade, would be as impossible as to write a book which should include every possible combination of the letters which compose our alphabet.

The list of colored paints offered for sale in the “country-store,” or in the ordinary paint-shop, is not by any means exhaustive; and, in giving instruction as to what paints to order for certain purposes, care must be taken to make no mention of those which are not, as a rule, within reach.

As before said, white-lead, or zinc-white, is the staple of all light-colored oil-paints, and the quantity of coloring-matter, compared with the base, is as a drop in the bucket—not literally, of course, but comparatively. In this connection attention is called to Chapter VIII, page 57, wherein the common and extreme adulteration of paints is set forth; and for the reason that, in case one should follow the written directions below, and the result should disappoint, an excuse may be at hand for such an unexpected outcome. For example: suppose the would-be color-mixer to have on hand a hundred pounds of pure white-lead for the purpose of making a drab neutral tint for painting the exterior of his dwelling-house. He learns from the book that a single pound of pure burnt umber, or raw umber, as the case may be, will in all probability be sufficient to produce the tint or shade he may require; the chances are, unfortunately, that the pound of umber he will get will be adulterated to the extent of eighty per cent., and will contain only a fifth part of the coloring-matter he requires, and will, when mixed in with the white, instead of giving the color required, simply change the comparatively pure white of the lead to a dirty white. Yet he has done according to the book, and the result is not as predicted. Who shall bear the blame—the book or the color-maker?

The colored pigments used in tinting with white are burnt Turkey umber, raw Turkey umber, Indian red, Venetian red, chrome-yellow and the yellow ochres, ultramarine blue, Prussian blue (which is a deep purple), burnt

Italian sienna, and raw Italian sienna. These latter named are transparent colors, so called, as are the umbers, Prussian blue, and verdigris.

Burnt umber, mixed into white-lead or zinc-white, will give almost any drab tint that can be desired, of a warm tone ; that is, tending to red. By the addition of more umber, one or two or more darker shades may be had for contrast on the molds and cornices and trimmings, which shades will be entirely in harmony with the body-color, by analogy. Not to repeat, the same rule will apply to the use of raw umber, only that yellow drabs, instead of red, will be the result, and the trimming colors so produced will be almost too cold and greenish to please the eye. Good effects are produced by the introduction of some decidedly positive colors in moderate quantity, in contrast with neutral tints—such, for example, as Indian red or some other rich red brown—and this practice is hereby recommended.

Raw sienna gives, with white, a soft, clear straw-color or buff. Burnt sienna, with white, produces a pink of an undesirable hue. Yellow ochre, that is, the genuine “*Rochelle ochre*,” with white-lead, produces a range of tints most to be desired, and pure and sweet in tone, from the clear yellow-brown of the ochre-pigment up to the palest straw-color used ; the pigments thus produced will prove durable, and in color not fugitive. Indian red will give, with white-lead, a peach-blossom color, which was once a favorite color for walls in interior painting. Prussian blue gives all the tones of blue, from purple to the lightest sky-blue.

Verdigris gives with white a clear leaf-green, and with white and yellow a pea-green, which is a good color for wooden houses in the country. It will be borne in mind that in coloring with verdigris the paint will be very much darker when dried upon the building than when viewed in the mass. Pure French verdigris is blue to the eye, but, when ground in oil and used as a paint, it puts on a dark bronze-green, and deepens in hue for a long time after exposure to the light. This pigment is specially adapted for ship and vessel painting, because of its unrivaled water-proof qualities, its tenacity and non-liability to crack and flake off, and its property of drying under salt-water. When used for vessel-work it should be mixed as follows: Ten pounds of pure verdigris, two pounds of pure white-lead, and one pound of chrome-green, light, so called. Venetian red with white produces an impure pink which will fade very quickly when exposed to the sunlight. Ultramarine blue gives, with white, a range of purer, clearer light blues than does Prussian blue. The carmines and lakes are used mostly as glazing-colors, and their peculiarities and mode of application will be found fully set forth under the head of "Carriage-Painting."

CHAPTER VII.

IMPORTANT.—PAINT AS AFFECTED BY ATMOSPHERIC AGENCIES.

HEAT would seem to be a power as indispensable in the drying of oil-paints as in the growth of plants. A freshly-painted surface will, under certain atmospheric conditions, remain fresh and soft for a length of time which will put the patience of a Job, even, to the severest trial. Paints which will dry hard in twelve hours under an atmosphere showing 70° of heat, will continue for days and days in the same state as when first applied under a freezing temperature. In short, the time required or necessary for the drying of a coat of oil-paint will be in exact proportion to the number of degrees of heat to which it may be exposed. This, within reason and moderation, of course. Because of the foregoing proposition, one must not expect to dry a coat of paint in five minutes by exposing the same to a burning heat. Therefore, the difficulty of compounding and preparing colors which shall dry quickly enough under a winter atmosphere, and not harden in the containing package, or dry *too* quickly under summer heats,

will be understood and appreciated. The sensitiveness of freshly-painted surfaces to the influence of heat, or the absence of heat, is demonstrated by certain experiments conducted by the writer, with a view to ascertain with exactness the facts in the case. For this purpose, painted surfaces were exposed, in a steam-heated room, under a temperature of 70° Fahr. These surfaces were placed near an opening through which the unheated or cold air of the adjoining apartment entered, and came in contact with a portion of the painted surface. Examination on the day following the exposure revealed the fact that the portion *not* exposed to the draft of cold air was quite hard and dry; whereas the portion which had been under the action of the colder atmosphere was as soft and fresh as when first applied. We desire to make this so plain that any wayfaring man, though a self-constituted painter, may not err therein. Should we attempt to teach the average farming or producing mind of the worse than folly of attempting to raise lettuce or radishes out-o'-doors in our winter climate, we should be hailed with a general shout of derision. Some query as to our grandmother would, no doubt, be heard. Yet, as plants will not grow in the absence of heat, so will paint not dry readily where a certain amount of heat is wanting.

The sportsman, of whom we read, said, in answer to a disgusted and highly-incensed farmer who called him to account for attempting to shoot his prize calf, "You see, Mr. Farmer, I aimed so as to hit it if it were a deer, and miss it if it were a calf!" Now, we would like to make

a paint on this same theory, if we could but find the way "how to do it." Under the heading, "New Method," in the following pages, will be found certain directions for the proper mode of applying liquid colors; but, in connection therewith, it must be borne in mind that in all house-painting operations, whether out-doors or indoors, heat is a power which must be taken into account, and it must be remembered that a mode of procedure which will work well in a summer temperature will not give satisfactory results in a wintry atmosphere. All oil-paints which dry readily, dry, or coat-over, on the surface. The skin, or film, thus formed, covers a mass of soft paint, and is wonderfully sensitive to atmospheric influences. A sudden lowering of temperature will cause it not only to wrinkle, so that the surface will reflect a different tone of color, but the gloss will disappear, as tender plants shrink and shrivel under the blighting influence of a killing frost. There need not be much fear of this result on a first coat applied to new or unpainted pine-wood, because of the absorbing quality of the same, which will leave no mass outside to skin or film over.

Having given the facts, it now becomes pertinent to seek a remedy. The only way to avoid such an untoward event—supposing the work must, in the nature of things, be completed in winter temperature—is to so extend, rub out under the brush, the finishing coat, that there shall be no mass of soft paint on the surface over which this skin, or film, can form. Every practical painter understands the phenomenon, and can, if he choose, so paint a house in

cold weather that alternate weather- or clap-boards shall present the appearance before alluded to, while the intervening boards shall be smooth and perfect. Our advice is, that painting should always be performed, if possible, in an atmosphere of 70° of heat, either natural or artificial; and we have to ask that the paint shall not be made a scape-goat to bear the sins of ignorance, carelessness, or the willful neglect of plainly-written directions. To be wise above what is written is, unfortunately, a common sin.

CHAPTER VIII.

EXTERIOR HOUSE-PAINTING.

THE extreme fondness for white exteriors in discordant contrast with green window-blinds, and for dead white for interior painting, is passing away. A better taste now, to some extent, prevails, and it is devoutly to be wished that the mania for white and green may return no more for ever. Apropos to this subject, Downing, in his "Architecture of Country-Houses," says : "The color of the outside of a country-house is of more importance than is generally supposed, since, next to the form itself, the color is the first impression the eye receives on beholding it ; and, in some cases, the color makes its impression even before we fully comprehend the form of the building. The greater number of our country-houses, in all parts of the United States, have hitherto been painted white, partly because white-lead is supposed to be a better preservative than other colors (though the white paint generally used is one of the worst in this respect), and partly because of its giving an appearance of especial newness to a house, which with many persons is in itself a recommendation. No person of taste,

who gives the subject the least consideration, is, however, guilty of the mistake of painting or coloring country-houses white; and yet, there are so many who have never given the subject a moment's thought, that we must urge upon them a few arguments against so great a breach of good taste. Our first objection to white is, that it is too glaring and conspicuous. We scarcely know anything more uncomfortable to the eye than to approach the sunny side of a house on one of our brilliant midsummer days when it revels in the fashionable purity of its color. It is absolutely painful. Nature, full of kindness to man, has covered most of the surface that meets his eye in the country with a soft green hue, at once refreshing and most grateful to the eye. Many of our country-houses appear to be colored on the very opposite principle; and one needs, in broad sunshine, to turn his eyes away from them to relieve them by a glimpse of the soft, refreshing shades that everywhere pervade the trees, the grass, and the surface of the earth. Our second objection to white is, that it does not harmonize with the country, and thereby mars the effect of rural landscapes. Nothing tends so much to destroy breadth of tone as any object of considerable size and of brilliant white. It stands harshly apart from all the soft shades of the scene. Hence landscape-painters always studiously avoid the introduction of white in their buildings, and give them, instead, some neutral tint—a tint which unites or contrasts equally with the color of the trees and grass, and which seems to blend into other parts of natural landscape, instead of being a discordant note in the general harmony.”

Wordsworth, in a little volume on "The Scenery of the Lakes," remarks that the objections to white as a color in large spots or masses in landscapes are insurmountable. He says it destroys the gradations of distance, haunts the eye, and disturbs the repose of Nature. The writer, in his book on "House-Painting," says of the use of white for exteriors: "It is a kind of Puritanism in painting which has no warrant in Nature, which, in such matters, should measurably be our guide and instructor. If we go to her for instruction, she will point us to the vaulted arch above, frescoed by day with a thousand shapes and hues of loveliness and beauty, and by night with myriads of stars; to the cool, gray tints of the morning twilight, and the gorgeous blazoning of the summer sunset. She will show us a landscape whereon, with lavish hand, she has painted forms of beauty of every color and hue, and tint and shade, and penciled with exquisite touches the tiniest leaf."

It must not, however, be supposed that, in seeking instruction from Nature, we are to copy the natural disposition of colors in the decoration of our houses, either in kind or proportion. The fact that Nature, in the vernal season, spreads a carpet of living green beneath our feet, and, at all times, a canopy of azure above us, is not of itself good reason why the base of a house should be painted green, and the roof sky-blue. In fact, these colors should have little or no place in the external ornamentation of a building, for the reason, if for no other, that Nature exhibits them in abundance, and of a purity that art can hardly hope to rival. It should be remembered that a building is not, as

before said, in any sense a natural object, but, with its formal lines and severe angles, is artificial to the last degree, and must, under all circumstances, be treated as such ; and any attempt to make it appear a natural object, by painting it with such colors as Nature most largely displays, is ridiculous. The true theory in painting a country-house is to render the building conspicuous, but not obtrusive ; to enhance its good features, if it have any, and diminish, or hide, its defects ; to bring it into harmony with its surroundings, and with the general landscape.

The use of the primary colors, red, blue, and yellow, and the extreme colors, black and white—excepting the latter in small quantity—is not admissible in exterior house-painting. The advocate of white may ask, exultingly, “What looks better in a country landscape than a white house peeping out from a mass of green foliage ?” which means, simply, What looks better than white when it is covered, or hidden from view ? For present purposes, the question of “how not to paint” may be considered as settled ; and it becomes important to ask, How shall we paint, and what colors are fitted and most suitable for exterior house-painting ? The economical view of the case will remain in abeyance, as appearances only are now important.

The tints or tones of color called neutral, or semi-neutral, as drabs, fawn, stone-colors, grays, buffs, cream and clay colors, are most suitable for exterior painting, as also olive-drabs and greenish-browns. Two or three tones of color which harmonize, either by contrast or analogy, may be exhibited in juxtaposition with good effect ; and this

style of painting is, happily, now the fashion—the custom of coloring exteriors with one uniform, unvarying tint, being among the by-gones.

The art of combining colors with each other, and with black and white, to produce the various hues, tones, shades, and broken colors, so simple to an adept, is among the mysteries to the uninitiated, and impossible with many, from the fact that not a small proportion of mankind are possessed of perceptive faculties which are not sensitive to color-impressions—i. e., they are color-blind. The perception of color is a natural gift, and the eye alone must be consulted as to what is good ; but, as much depends upon circumstances and conditions, as bodily and mental sanity, its judgment is by no means infallible, as “all looks yellow to the jaundiced eye” ; and, under the most favorable circumstances, the delicate organism of the eye becomes tired when exercised by certain color-impressions.

Since the publication of his book on “House-Painting,” the writer has been applied to by scores of people, from all parts of the country, to furnish rules for, and to give definite quantities of, the various colored pigments necessary to produce the tones and tints commonly used in house-painting. The difficulties in the way of such an attempt do not seem to have occurred to the applicants, probably for the reason that it is not generally known that much—perhaps most—of the paint sold by dealers throughout the country is not what it purports to be. Pure paints, whether white or colored, are the exception and not the rule ; that is, the chance of getting pure paint, as compared with the chance

of getting a highly-adulterated material, is small ; and that is not the worst. Many of the materials sold under the various names, as umber, siennas, etc., are not, except in name, what they purport to be, but wholly fictitious articles, without any of the properties of the genuine. To illustrate the difficulties in the way of furnishing a set of formal rules whereby to instruct the uninitiated in the art of combining colors, let a case be supposed. It is easy to say that one pound, or two pounds, of raw Turkey umber with one hundred pounds of pure white-lead, or zinc, will produce a tone of pure drab, such as will be suitable for coloring the exterior surface of a house. Now, suppose, instead of both articles being pure and genuine, the lead, or zinc, to be so much cheapened by adulterating materials that the tinting power of the same is only one quarter that of pure white-lead or zinc. To mix with this a pound, or two pounds, of pure umber, would give a shade four times darker than is wanted ; or, suppose the lead to be pure, and the coloring material to be wholly a fictitious article, or to be so much reduced as to have lost almost its coloring property. In the one case, a dirty gray or brown would be the result ; and, in the other, almost no effect would be shown by mixing the same with one hundred pounds of the white. In any event, the failure would be attributed, not to the fictitious materials, but to the author of the rule ; and on his devoted head would fall all the blame.

In painting, good results are possible only by the use of good materials, and the best are always the cheapest. A few facts will, perhaps, serve more fully to illustrate the

false economy in using cheap or impure paints, than would a volume of argument. Take the well-known article of lampblack as a familiar example. One pound of pure, fine lampblack, at a cost of twenty cents, possesses more coloring-power, and will color more surface, used by itself, than five pounds of black paint commonly sold in the shops at a cost, say, of ten cents per pound ; or, twenty cents' worth of the pure pigment will realize a better result than will a dollar's worth of the so-called cheaper paints ; and the pure paint will retain its intense blackness almost for ever, while the cheaper article will, after a brief exposure to the weather, turn gray, and soon fall off. What is true of lampblack is applicable to all pigments, whether white or colored. No one can afford to use impure paints. The best of its kind is always the most economical ; and no consumer should ever purchase a package of paint which does not carry with it the name of some well-known and responsible manufacturer. No matter how great "the skill of the workman may be, good results are obtainable only by the use of good materials."

To remedy the evils which grow out of the common and extreme adulteration of paints, and to save the trouble and loss of time consequent upon the mixing of colors with white, the custom has been adopted of selling ready-made colors, which are tones and tints mostly suitable for exterior, and many of them equally suitable for interior, house-painting. The list comprises a great many different tints and shades of color, and these are produced by the use of such materials as experience has proved to be most suitable

for such purpose—reference being had to economy, durability, ease of working, and purity of tone of color.

Bright blue and red grays, and pink and salmon colors, are not exhibited, for the reason that such colors are, in a measure, liable to the same objection as white, when used for exterior painting. These tones of color, too, are apt to deceive, and, in the result, to disappoint; the effect being so different with them, when seen in large masses, compared with a small patch of color shown on a sample-card.

It is not claimed that these colors are entirely permanent. No compound color can remain unchanged under the bleaching influence of the bright sunshine of our climate. By “compound colors,” in this connection, is meant those colors which are produced by tinting with white. Any and all of the natural-colored pigments, however permanent they may be by themselves, are rendered fugitive by admixture with white. For example: Venetian red, which, *per se*, is almost absolutely unchangeable, becomes one of the most fugitive colors when tinted with white-lead or zinc. The claim is, that ready-made colors are more permanent under the weather-influences than are the tones of color produced in the ordinary way; because those coloring native pigments only are used which have been shown by actual test to best retain their color under the fading influence of sunlight; also, that these colors are more homogeneous, for the reason that they are mixed with the white before the paint passes through the mill, and, consequently, become more thoroughly incorporated—more entirely an integral portion of the mixture—than are the colors mixed in small quantity

at the moment of using the same, as has been, heretofore, the general mode of producing tints and tones of color.

It will be understood that these paints are ground in oil, but *not thinned* with the quantity of oil requisite to spread them with a paint-brush ; that they come to the hands of the painter of about the same thickness or consistency as ground white-lead, and require to be thinned with raw linseed-oil, or turpentine, or both.

The writer is well aware of the fact that to a skillful painter the task of producing any desired tint or shade of color is an easy one, supposing the proper materials to be at hand, or readily procurable ; but such is not always the case, for, as before said, pure, unsophisticated colors are the exception, and not the rule. That the skill necessary to produce the various tones, tints, and shades of color is not universal among those who profess the art of painting, the writer has good reason to know, if only from the numerous applications received by him, since the publication of the book before mentioned, for rules and forms whereby those who are unskilled in compounding colors may be able to produce any desired tone, tint, or shade.

The advantages of ready-made colors are many. They are more economical, because they are mixed in large quantities by steam-power, and, as only the exact quantity of coloring-matter required is added, there is no waste. The tones and tints are the purest possible, being produced by the use of the very best materials. They are always the same, being compounded by rule, and always in like proportions, and any additional required quantity of the same

color may be readily obtained. Samples are furnished, and the owner may select the exact tone or hue which may please his taste before the work shall be commenced.

Referring to the use of those colors wherein the yellow ray is predominant, the writer would impress most strongly the fact that, of all the colors except white, yellow is, from its strong reflective power, the least diminished by distance, and the most difficult to neutralize. There will always be more of it than the sample would lead one to expect. It never comes short of its promise, and becomes obtrusive as it is exhibited in large masses. Caution must, therefore, be used in the selection of the yellowish colors, for, unless a decidedly yellowish tone is wanted, the result is apt to disappoint. It is, however, less obtrusive than white, and always in better harmony with the landscape, either in the vernal or winter season. A yellow house with green blinds is perfectly harmonious in itself, and with its surroundings; yellow being almost the only color which harmonizes perfectly with all the shades of green and all the shades of brown.

There are, in all communities, timid persons who can not bear criticism; who, in matters of taste, have no well-grounded opinions, but are controlled entirely by the decided expressions of their stronger-minded neighbors. To such the writer would recommend, in house-painting, the use of those colors which are so entirely neutral as to disarm criticism. Variety is, however, most desirable, and no two houses in a village should be painted alike, supposing all to be painted well. Exterior house-painting affords a

good opportunity for the expression of individuality, and every man should, in some particular, express himself differently from his neighbors. Fortunately, the alphabet of color is inexhaustible, so there exists no necessity for uniformity. The custom which has heretofore much prevailed, namely, of painting groups of buildings, belonging to one homestead, of uniform color, is not a custom to be honored. Every member of a group of structures should have its individual color, as it has its own form and size. One general tone should pervade the whole, but each should have its distinctive color, except where it may be desirable to hide or diminish some of the lesser buildings. That will best be accomplished by painting such of the same color as the main, or principal, building. As a rule, the principal building should present the lightest shade. A very light yellow tint, showing more or less of the red ray, is suitable for painting houses which are partially concealed by foliage—which look out upon the public through masses of green of every hue. It accords admirably with any of the greens, from the brightest hue of the willow to the darkest green of the pine. It is a bright, cheerful tint, sunny—but not glaring, like white—warm, harmonious, and agreeable, particularly in a bare, winter landscape. It is not recommended when the house is a conspicuous object in the landscape, isolated, unscreened by trees—being, under such circumstances, liable to the same objections as white. The strong reflective power of yellow causes this color, when viewed in large masses, to present a staring appearance. For buildings so exposed, the drabs or gray tints are pref-

erable. These tones of color, too, wherein the yellow ray predominates, are the only ones suitable for exterior painting which harmonize with green blinds. No theory, however well elucidated, can teach the art of properly combining colors and tints for decorative and ornamental purposes. Such knowledge must come from practice and observation, and the eye alone must be consulted as to what is good.

The foregoing directions, theories, or suggestions, as the case may be, are given under the impression or conviction that they will affect, in the way of instruction or education, and be useful mainly to, owners of houses who reside at greater or less distances from the larger centers of population—of country-houses, so called; and with such owners the writer would have a little plain talk before concluding this chapter, assuming that his forty-seven years of constant experience and practice in this matter invests him with the privilege of offering advice, without becoming obnoxious to the charge of vanity or presumption.

Pine-wood surfaces must, in the nature of things, present, in exterior weather-boards, clapboards, moldings, and plain work, more or less of imperfections in the way of knots, and sap, and resinous exudations. The life of the pine-tree is the sap, which hardens to turpentine on exposure to the atmosphere, and the dead wood always retains more or less of this resinous substance. Unfortunately, this "gum-resin" is incompatible with the oil used for outside painting, which will certainly dissolve it; and the resin in solution will, in turn, as certainly destroy the

paint. This is, no doubt, a bad state of things ; and, unfortunately, there is in outside work no good remedy for it. (The reader is requested to note carefully what is said on this subject in Chapter IX, under the heading of "New System," etc.)

The *so-called* remedy is no remedy, for the reason that it proves in the end worse than the evil it is intended to cure. A coating of shellac-varnish is sometimes applied to the knots and pitchy places ; but this application, which serves moderately well on interior work, proves an entire failure when used on exterior surfaces ; for the sun and heat will reveal these spots in spite of all efforts to conceal them. Time, and the elements, will certainly work a cure ; but every house-owner does not care to wait this slow process. In such cases the evil must be borne as best it may. The owner of an old house is certainly well rid of it. The practice of the writer is, to expose new pine-wood to the action of the weather-forces for one season before painting ; that is, one summer and winter through. This not only remedies the evil in question, but it does much more in the way of good results. The weather corrodes, roughens, oxidizes, the planed and smooth surface, and corrugates the same, thereby giving the paint, when applied, something to hold, to cling to. The tooth of Time eats out the wood, and also renders inactive and innocuous much that the pine contained which had a natural tendency to hasten the destruction and lessen the durability of the paint. A common practice among builders is, to have the painter follow the carpenter with the brush and pot, so that the

wood may be coated as soon as the hammer leaves it. This is done, no doubt, with a view to lessen the shrinkage of the wood—a most absurd theory, truly. One may as well attempt to arrest the rushing waters of Niagara with a wicker dam as to hope to prevent, or lessen, in one hair's-breadth, the shrinkage of soft wood. Every hygrometric change in the atmosphere increases, or lessens, as the case may be, the bulk and dimensions of dead pine-wood, though it may be heavy with successive coats of paint. Every man knows, who has lived in a furnace-heated house, how the soft-wood doors will swell to tightness in the moister atmosphere of summer, and shrink to rattling openness under the dry heat of the furnace-fire and the closed doors and windows. In view of this, what vanity to hope to arrest the shrinkage of pine-wood exposed to the burning fervor of our summer sunshine! As well hope to crystallize water without increasing its bulk, or cool hot iron without contracting its dimensions! From what has been said, the conclusion may be drawn that satisfactory results are not to be looked for in the first outside painting, with oil-colors, of a new wooden house. We know, as a rule, that the practice is, with those who build houses, to have the painter follow the carpenter as soon as possible; and a manufacturer of paints should be the last to deprecate this custom. We are free to confess, however, that we do not anticipate any appreciable diminution in the consumption of paints because of the facts herein given. We rest in the conviction that the owner will paint his new house just the same as if nothing had ever been said to

the contrary ; that the builder will smile in derision of our theory, and the painter will treat it with the utmost contempt. Therefore, since we must and will paint our newly-planed wood, how “best to do it” presents itself as the most important question. Certain rules as to time should be heeded or listened to, and certain conditions should be observed. Much of the flaking, peeling off, cleaving of paint from wooden surfaces is, not because of any defect or shortcoming in the material, but because the paint, though properly applied, is not applied at the right time, and when the conditions are favorable to a good outcome. If paint be put on a piece of wood, the pores of the same being saturated with water, the chances are that the paint will not adhere tenaciously to that surface. Why ? Because the spaces which the paint should have filled were already occupied with a substance which is the universal solvent ; and the paint could find no permanent lodgment, from the fact that no two material objects can occupy the same space at the same time. The water pushed the paint from the wall ; that’s all there is of it. The important question of *what* to use, is next in order ; and thereby hang a great many tales. Your village painter being called in consultation — not yet having become a convert to the doctrine of ready-made colors—will say, with most amusing dogmatism : “No — no — no ! No mixed colors for me. I can make my own colors, and do it better than another, because I know my trade.” To this action on the part of the painter no reasonable exception can be taken, for all handicraftsmen are as proud

of their acquisitions in the way of knowledge and of learning as of their manual dexterity. To know, and to do, is their just and proper pride. These objections are, however, becoming less and less frequent every day; and the painters themselves are fast becoming converts to the theory that ready-made colors relieve them of what has heretofore been the drudgery and vexatious part of their trade; and the proof is constantly before their eyes that colors, mixed as aforesaid, do not fade so quickly as do colors made by tinting with white-lead, at the moment of using the same. The reader will understand, once for all, that when we speak of these colors we have in mind the paints manufactured by responsible parties, who have been long enough in the business to have learned, by practice and experience, what mixtures will give the best results—what to use and what to avoid; and not the thousand-and-one so-called “mixed colors” put upon the market by parties irresponsible, ignorant, without education and without experience—men who essay paint-making before they gravitate to their natural level of agents for life-insurance, or wringing-machines.

In selecting a paint, it will be safe, as a rule, for the purchaser to distrust claimants for favor just in proportion as they are thrust upon the public by loud and windy advertisements, high-sounding titles, and brag, blow, and bluster. Fortunately for the purchaser, the so-called “rubber paints” do not contain any “caoutchouc,” and the “fire-proof” paints do not contain any “asbestos,” or other fire-proof substance. “Good wine needs no

bush” ; and, as a rule, stuff offered for sale to the public is devoid of any real value or intrinsic worth just in proportion as it is extensively advertised. No dealer in specie, or true coin, ever advertised his business to the extent of two hundred thousand dollars a year. Quack-medicine venders do that.

To come back to our “plain talk.” We suppose a new house in the country, presenting exteriorly pine-wood boards, clapboards, moldings, trimmings, and cornices, more or less elaborate and ornamental. The painting is, or should be, a matter of prime importance, because the beholder will receive his first impression rather from the color than the form. Architectural beauties may be spoiled by bad coloring ; and defects may be lessened, or hidden, by a proper exhibition of well-selected or well-chosen tints. In this work, fancy can not anticipate the fact ; and the most skillful composer in colors can not, under novel or untried conditions, say, with certainty, what will be the effect of any proposed arrangement, for the reason that the eye alone must be consulted as to what is good. In this matter of painting exteriors with colors, an ounce of practice is worth a pound of theory. Any tint, hue, or shade may be selected for the main or body color—not, of course, positive colors, or extremes—and the contrasting colors may be made to harmonize therewith ; but this will be discovered in practice, and must not be taken for granted because of any theory, no matter where and when, and by whom, promulgated. The writer does not hope to make any converts to his theory and practice of presenting

the pine-wood surface to the action of the weather-forces, for a year, unpainted ; but he would impress most strongly the importance of giving the wood time to dry before applying the paint. To the dry wood, then, give a coating of *thin* paint to all parts, of one color—the color selected for the finish—the main or body color. The reason for this is, that it is useless to waste time in putting on two colors, when one will serve all good purposes. Having the selected tint on the main house, one may experiment with the trimmings, and find out, in actual practice, what will give the most pleasing effects in the application of the companion-colors, both by contrast and analogy ; in other words, by the use of the same color as the body-color of darker tone, or by the use of a different or contrasting color, as a warm brown with a cold gray or a neutral drab. Better effects can be produced by the use of three colors than with a less number. For instance, suppose a neutral tint for the main color, with a darker tint for the trimmings. These would harmonize, of course, by analogy, or because they are alike. The introduction of a third, different, and much darker color than the others—for instance, a rich neutral brown, or red brown, as Indian red, or Tuscan red, producing thereby a harmony by contrast—is recommended. The third color must, however, be exhibited in small quantity, as compared with its neighbors.

The succeeding coats of paint should not follow each other too rapidly in outside painting. The first coat should stand, at least, one week—ten days, or even two weeks, will be better—before the application of the second coat ;

and, if a third is to be applied, the same time should be given as between the first and second coatings. The use of very dark colors is not recommended, for reasons which include both taste and economy. A very dark-colored building, exposed to the direct action of the sun, absorbs the heat-rays, and the atmosphere in and about it will be at a higher temperature than under other conditions. The wooden surface becomes heated almost to burning under the rays of our bright summer sun, and the boards dry and warp, and split and shrivel, under the heat-force. Red shingle-roofs are specially affected, and often become leaky because of the absorption of the heat from the sun. Very dark-colored buildings do not harmonize so well with the general landscape as do those of a lighter tint, and so become hard features therein. Such a style of painting is better avoided by general house-owners.

As a parting word, the writer would most emphatically warn any would-be purchaser of paints, for his own use, to avoid the numberless chemical and other compounds which are daily offered in ever-increasing variety. If these compounds are what they claim to be, they are what the house-owner does not want; and, if they are not what they claim to be, there is fraud on the face of the business. Nothing has yet been discovered, in the way of durability and every other good quality, that can for a moment compare with the oil of flaxseed as a vehicle or medium for preparing pigments for external house-painting. Linseed-oil paints are good enough, and, with good enough at hand, it is vanity to be looking for something better.

CHAPTER IX.

NEW SYSTEM OF INTERIOR HOUSE-PAINTING.

THE painting and repainting of the interiors of our houses may properly be classed with the disagreeable necessities of domestic economy. Disagreeable, because of their interference with the orderly process of daily routine—of its costliness, and the unpleasant odor which exhales from the painted surface, and because of its supposed unhealthfulness. The writer has been, for many years, of the opinion and conviction that the almost universally adopted and accepted practice in the art of house-painting is not in accordance with the *general* advancement and improvement of the age. Let it be borne in mind that these remarks apply to the use of white and colored pigments in the ornamenting, beautifying, and utilizing, so to speak, of the wood and plaster surfaces of interior domestic architecture.

To best set forth what there is in the present system which needs reforming—or, perhaps, eliminating—let us proceed to examine it in detail. Suppose a new house, well rid of the plasterers, and turned over by the joiners into the hands of the painter. The usual mode of pro-

ceeding on the part of the latter is, to cover the wooden surface with a coating of white-lead, thinned to a proper consistency for application with the oil of flaxseed, or linseed-oil, as it is more generally named. To produce a moderately satisfactory result, this process must be three times repeated; and, as some days—say three or four—must elapse between the successive coats, and a week or more to complete the final drying process, not less than about twenty days will have been consumed in the work of painting alone; and many weeks must pass by before the house-atmosphere will have become clear of the unpleasant odor which exhales from the paint in its gradual hardening or drying process. If, after this lengthened and tedious operation, the result were satisfactory, and the surface, which has been produced at such a cost of time and money, gave promise of stability and permanence, there would be less of necessity for seeking out or inventing some system which shall be free from the evils inherent to the present one.

It is now pertinent to inquire how far short the present system comes of what may reasonably be demanded in this age of improvement.

The soft pine-wood in common use in the construction of what is called the wood-work of our houses, such as doors, shutters, casings, base-boards, etc., presents more or less of knots and other imperfections, which contain resinous matter, the nature of which is incompatible with the oil used to thin the paint for covering the surface. Consequently, the oil, which is a ready solvent of the resinous

matter, enters into combination with it, decomposing it, and forming a substance which discolours the white pigment to such a degree as to deprive it of its power to cover and conceal these imperfections. This evil, too, is a growing one, as the pine-forests disappear more and more rapidly under the increasing demand for timber, and the (to that species of vegetation) destructive march of civilization. Therefore, every year, less of choice is left in the selection of timber for joiner's-work, and materials are used which a few years ago would have been utterly rejected for such purposes. The common remedy for this evil is the interposition of some substance which shall act as a shield between the oil and the resin, and keep them from actual contact. A varnish made of gum-shellac dissolved in alcohol is the best material yet discovered to prevent the discoloration before mentioned ; but one application is hardly sufficient, because the action of the oil reveals many places which the eye failed to discover before the application of the first coat of paint. This may be remedied, in a measure, by giving a coating of varnish to the painted surface ; but the remedy is not absolute, as the dissolving action of the oil continues after the paint is supposed to be hard and dry ; and discolorations appear, from time to time, to such an extent as to seriously impair, if not destroy, the uniformity of the painted surface. In addition to this evil, which inheres in the wood itself, is the gradual darkening of white-lead paints thinned with oil, when not exposed to the bleaching influence of direct sunlight. For this there is no remedy but to dispense

with the use of linseed-oil in the last or finishing coat, and the substitution of oil of turpentine (spirits of turpentine)—or the partial substitution, rather, as there still must be a portion of linseed-oil used, or the paint would have no more adhesive power than if mixed with water. The partial substitution of the drying-oil with the volatile oil of turpentine lessens the tendency of the paint to turn yellow ; but the remedy is little better than the evil it is intended to cure, because the adhesive and water-proof character of the paint is, to a great degree, destroyed thereby, and the washing and wiping of the painted surface, indispensable to cleanliness and neatness, soon remove the paint, and bare spaces on the most handled parts of the wood-work are the unavoidable result. Nothing is more common, in-doors, than revelations of bare wood around door-handles and much-used portions of the wood-work of frequented rooms, while all the rest of the painted surface is quite unworn. An entire repainting is the only remedy for such a condition.

No person, whose knowledge comes from experience, will hesitate to agree with the writer in the declaration that, all things considered—as costliness, loss of time, and other attending discomforts—painting, that is, the ordinary painting and repainting of our interiors, is satisfactory neither in the process nor in the result. To abandon one's domicile for weeks, or to remain in an atmosphere which is sickening, or at best disagreeable, during the operation of repainting, with the knowledge that the freshness of the beautiful white or delicate tints, so pleasing

to the eye, will hardly outlive the unpleasant odor of the drying paint, is certainly good and sufficient cause for the inquiry : “Can not a better system than this be invented or discovered—a system which shall include all that is good in the present, and exclude most of all that is bad ; which shall introduce what is required, and banish what all will so readily dispense with ?”

It would seem pertinent, now that we have presented the shortcomings of the present practice, to inquire what a system should include to commend it to general favor, and insure its more or less speedy and general adoption.

First in importance, but last to be ascertained, is durability, unchangeableness in color and substance ; smoothness of surface, to cause foreign substances to adhere to it with the least possible cohesion ; sufficient hardness to preserve its integrity under the unavoidable and constant wiping and washing ; and sufficient tenacity and elasticity to enable it to resist accidental knocks and blows, and to insure it against cracking, or separating, as hard varnish is apt to do after long exposure. It must possess, in a good degree, body, covering or hiding quality, to conceal the wood under the least possible number of coats, and give uniformity and homogeneousness to the work. It must resist the discoloring property which inheres in the wood, and the darkening, yellowing, external influences, either of domestic gases, or whatever other atmospheric agencies tend to produce that result. It must dry or harden so rapidly that new pine-wood may be finished ready for use in not more than four or five days—that is, the succeeding coats

should follow on consecutive days. Lastly, it must work easily and flow smoothly under the brush, and not require any extraordinary skill in the handling, as no paint can find favor with professional painters which requires unusual skill or labor in its application. In short, to fulfill all the requirements of a good paint, it must dry quickly, cover well; present a smooth, hard, unyielding surface; be water-proof and dirt-proof; spread easily, smoothly, and evenly under the paint-brush, and retain its tint, whatever discoloring influences it may be subjected to. The finished surface must be of such a character that a simple wiping with clear water and a soapy cloth shall remove all finger-marks and other ordinary discolorations. "Scrubbing of paint" should be taken out of the category of a housewife's duties. The paint should reach the hands of the consumer, be he professor or amateur, in a liquid state, requiring no mixing or other manipulation, except, perhaps, a stirring with a stick, to render the whole mass of like consistency throughout.

It will be understood that we are treating the subject, not as it concerns or affects the few, but the masses; not the wealthy citizen who has the means and conveniences of repainting within his easy reach, and who must, in obedience to the dictates of fashion or taste, adhere to that custom which rigidly requires all painted surfaces to be flat, dead, without gloss, and non-reflective to the last degree, but the average town and country householder, who can not, for many reasons, decorate his domicile as taste and fancy may suggest. It can not reasonably be

denied that, where appearance alone is important, a flat, non-glossy, painted surface, in-doors, is more beautiful and more delicate than painted surfaces which reflect the light, particularly in white or light tints ; but this kind of painting is costly, and in the least degree fulfills the conditions which, in the opinion of the writer, the average householder requires and demands.

The new system of interior house-painting in practice requires certain conditions which are entirely essential to its full success. The condition precedent is, that the paint shall not, as a rule, be applied to an unprepared surface of new pine-wood. The preparation, which will be described after, being an economical process, needs no apology on the score of cost or trouble. The following detailed process, whereby the “new system” is to be rendered practicable, will be made so plain that any person with a slight knowledge of how to use a paint-brush, not a practiced painter, may adopt it ; not, however, with the best results, because, with this, as with every other system, the best results come through the best knowledge and the most skilled manipulation.

First, it is proposed to apply the new system to the interior surface of a house finished with ordinary pine-wood. The unpainted wood must receive, preparatory to painting, a liberal flowing coat of shellac-varnish. This coat effectually kills all knots, pitch, and sap. It fills the pores of the wood, and, for all practical purposes, is worth more than two coats of ordinary paint. The cost of the varnish is not great, and of applying it but a

trifle ; but, as it is worth ten times its cost, and insures a good result in the end, no more need be said on that subject. This varnish-coat will dry in an hour, and the work will be ready for puttying. Ordinary putty will not do for this. The putty must be prepared at the time of using. To make it, take from the can a sufficient quantity of the paint to be applied to the work, be it white or colored, mix with common whiting to a proper consistency, and use a putty-knife in stopping the holes and crevices. The stopping or puttying being completed, brings the work to a readiness to receive the first coat of paint. The preparatory step in the painting will be a thorough stirring of the paint, so as to make the material of uniform consistency. Next, pour whatever quantity may seem best into a clean paint-pot. Flow on to the work with a brush, and leave as much paint on the surface as will stay there without running. Next day but one, apply the second coat of paint as before. The work now gives a smooth, uniform, glossy, and water-proof surface. The finish will be found far superior in solidity and much more homogeneous than the same number of coats of best white-lead, as commonly applied, and, if the result be satisfactory, there need be no more discourse on that head ; but we suppose a better surface yet be required, and the utmost perfection of the system be demanded. The application of a third coat of paint completes the job, and gives the best painted surface that can possibly be produced by any reasonable expenditure of time and money. The surface will clean like French china. It will improve by

washing and wiping. It will be found hard enough to resist any ordinary wear, yet elastic enough to stand without cracking or chipping. We think we speak with moderation when we declare our belief that one painting under the “new system” will outlast four paintings under the prevailing one.

The question of economy now presents itself—a most important consideration, this question of expense. It must not be supposed that we can have all these good and desirable qualities without paying for them. Yet the results heretofore described can be brought about with no extra outlay. The cost of painting under the “new system” is no greater, perhaps, than under the old ; but when the question of economy, in its most comprehensive aspect, is held up to view, the new system has altogether the advantage. Enumerating the advantages, we have—the less time required to dry the paint and make it fit for use ; the superior smoothness and water-proof character of the surface, whereby the cleaning is rendered easy ; its durability under repeated washing, wiping, or scrubbing ; its non-liability to discolor under the influence of ordinary domestic gases, smoke, and other discoloring influences, common in every dwelling ; its tenacity, wearing properties, and the infrequency of its necessary renewal. All these good qualities combined render it, in the best sense of the word, the most economical process ever adopted.

Directions which must be observed and obeyed :

Strain the paint! Let the pail or pot out of which the paint is to be used be clean and free from dust or

motes. Tie over the top of the pail a piece of common Swiss muslin, such as is sold in the dry-goods shops at about twenty-five cents a yard, and pour the paint through it. Maybe there will be nothing caught in the strainer. If so, the error will have been on the safe side. In such a proceeding the old saying, "An ounce of prevention is worth a pound of cure," has peculiar significance. Keep the muslin strainer under water, and it will serve a good many times.

Do not leave the paint exposed in an open can or pot.

Be sure that the brush is clean. It is always well, where the brush has stood for a time in water, unused, to wash it out well in turpentine before putting it into the paint. The best brush for applying the paint in question is the commonly-used bristle brush. For extended flat surfaces, a flat brush, known to painters as a kalsomine-brush, is recommended.

There seems to be no further explanation necessary in elucidation of our theory. The new system of painting must, of course, stand or fall by reason of its inherent merits or demerits. If it shall prove in others' practice all that we have proved it in our own, it must necessarily find favor. Like all new things, however, it will in many instances be thoughtlessly, carelessly, and unjustly condemned. Failures, necessarily growing out of want of care, non-compliance with plainly-written rules and directions, unskillfulness in handling, and many other good and sufficient reasons for failure, will be laid at the door of the unfortunate paint, and, like the scapegoat, it will be made

to bear the sins of many. That, however, is all anticipated by the author of the "New System"; and, in spite of it all, he calls attention to the same, in the fullest confidence that, notwithstanding these unavoidable drawbacks, there is certain success awaiting its introduction. With the following brief summary of the rules and modes of operation, the theory is offered, and commendation is asked, only in proportion as it shall fulfill what is claimed for it :

1. Do not apply the paint to an unprepared surface of new pine-wood.

2. Do not use ordinary putty in stopping the nail-heads.

3. Use a putty-knife in stopping the nail-heads and crevices.

4. Strain the paint before using.

5. Old painted work should be clean, and well rubbed with pumice-stone, before applying the new paint.

6. Do not leave the paint exposed to the air in an open vessel.

7. Do not rub the paint out, under the brush, as with ordinary color, but flow it on like varnish.

8. Put as much paint on the surface as will stay there without running.

9. Before applying the paint to new work, flow on to the wood, with a paint-brush, a liberal coat of shellac-varnish.

10. The more the paint is washed, the better it will look. It may be washed with cold water and a soapy cloth on the third day after being finished.

11. It is not poisonous, or in any wise disagreeable or detrimental to health.

12. Bedrooms may be slept in, during the operation of painting, without fear of unpleasant results.

These paints are presented in liquid form, put up in tin cans of various capacities, containing from five gallons to so small a quantity as one quart. The sample-card includes the various colors and tints suitable for in-door painting.

CHAPTER X.

WHITEWASHING OR COLORING WALLS AND CEILINGS— CALLED KALSOMINING.

THIS simple operation is sometimes mystified, or made occult, under the appalling title of calcimining, or, as generally rendered by the professors of the art, kalsomining. This terrible word, enough, in its sight or sound, when not understood, to make “the knotted and combined locks to part, and each particular hair to stand on end,” is as harmless as *Bottom* in the play when its meaning becomes known to the startled auditor who first hears or sees it, perhaps in connection with a painter’s bill of magnificent proportions. *Calx*, or lime, is the root out of which grows this formidable verb, or noun, as the case may be, and to *calcimine* is, in plain English, to *whitewash*; and, if the material be colored, the operation is the same—only it is then brought within the category of the Dutchman who would have his walls “whitewashed mit blue.” This common and simple operation, namely, the whitewashing of walls and ceilings, is so much a matter of course, that the average householder does not deem it

worthy of investigation, and does not seem to care to understand what the operation includes. Yet, from a sanitary point of view, it is a subject of prime importance.

The promulgation of Professor Tyndall's theory of "Fermentation and Disease" is, in the opinion of the writer, the most important announcement since the discovery of oxygen by Dr. Priestley in the latter part of the eighteenth century. Indeed, so far as it relates to the material welfare of the human race, it may prove the most important the world has ever listened to. The question has already been asked, no doubt, by the reader, what possible significance the theory can have in this connection. Much. The paint for the million has been, and will continue to be, lime and water. This water-paint, when properly prepared, has many good and desirable qualities. It cleans, it whitens, thereby bringing in light, which is wholesome, and good, and indispensable in the best development of human nature, and probably other animal natures. Indeed, so important an element is light, that to be deprived of it is almost to be deprived of existence. All dark growths are sickly, and savor of the earth. Sunshine is necessary, not only in the moral world, but is, as well, a physical necessity; and any theory of painting which ignores this fact should be distrusted. It is not good to live in dark dwellings; it is not wholesome to sit in dark rooms; and the only fit occupants of gloomy, sunless abodes are sickness, or sorrow, or sin, or shame! The writer has witnessed with lamentation the growing disposition on the part of those householders who claim to be the

best, the leaders in society and fashion, to adopt the use of dark hues and shades in interior color-ornamentation. It will be kept in mind that the average householder has, as a rule, no fixed or definite opinion or purpose as to what he wants, but is, on the contrary, almost wholly governed or persuaded by the taste, or opinion, or dictum of the decorator, or upholsterer, or furnisher who is at and for the time "the mode." We believe that abodes and dwellings, rooms and apartments from which the sunlight is excluded, are not as good homes or abiding-places for human beings as are those where the sunlight has free access, and where the light of heaven abounds. Suppose the effect of these entering rays of heaven's light be to send to their holes the bats, and owls, and bugs, and other uncanny things; it will, at the same time, expose their dark ways, and enable us to shut them out, so they shall find ingress no more. This digression is for the purpose of more fully impressing the importance of the use of light, white, or nearly white tints in water-painting, or white-washing, or "kalsomining," as one may choose to name it. Lime is, we repeat, and must continue to be, the paint for the million; and well it may be, as it includes many good and desirable qualities or properties. It covers well, cleans, sweetens, and disinfects, and costs almost nothing. Any room with plastered walls and ceilings may be made neat, sweet, tidy, and wholesome with a little labor and less cost, by the use of lime-water paint. How to do it? It is easily done, and a very simple operation. So: procure from the shop where such articles are sold a quan-

tity of lump-lime—mind, lump-lime—not lime in powder, which will be more or less air-slaked. These lumps must undergo the process of slaking by or through the application of water: cold water is good enough; but the water must be poured on the lumps not all at once, but as the changing conditions require. The lump or lumps should be placed in a tight pail or pan, as may be convenient, and wet with water, which the thirsty stone will eagerly drink up. For a minute or two, or more, no change will be perceptible, although a wonderful chemical change is going on nevertheless. The water, having been heated by this chemical operation, will exhale from the stone in the form of vapor, and a slight change in the appearance of the lump will be perceptible. The slaking may be said now to have fairly commenced, and more water must be given, and more by degrees. The process will continue until the lumps shall have become entirely disintegrated, have fallen into powder of snowy whiteness, and with the water will boil like an open tea-kettle over a brisk fire. This boiling process must be carefully watched, as the water is thrown off very rapidly in the form of vapor and steam, and the tendency of the mass is to dryness. When the miniature craters begin to form and solidify on the surface of the mass, more water must be added; and when the ebullition ceases, the whole may be stirred thoroughly with a stick, and thereby rendered entirely homogeneous. Being cool, a portion of it may be taken and thinned with water to a proper consistency for application with a whitewash-brush; the thinner the better, so the wall be solidly white and

spotless, and not streaky. If the wash be applied too thick, it will show a sandy surface, and be apt to flake or chip off, and will have a tendency to turn yellow. This wash—the lime being properly slaked and properly applied—will have in itself sufficient adhesive power to keep it from rubbing off when brought in contact with the hand or garments, to which it is, of course, constantly exposed.

The practice of water-painting, commonly called “kalsomining,” is in this wise: The base of the water-pigment is known to all as chalk, which is a soft, friable carbonate of lime, containing more or less siliceous matter and other impurities. These impurities are removed by grinding the chalk under a heavy edge stone which slowly revolves on a circular bed. The bed is surrounded by a water-tight tank, into which flows a constant stream of water. The particles of the crushed materials, agitated by the stone in its motion, are temporarily held in suspension by the water, and flow off with it into large sunken vats, a number of which, placed side by side, are connected by troughs; the overflow of the first vat is received by its nearest neighbor, and so on until all the vats become filled. The vat farthest from the mill will, of course, contain the finest deposit of all, from the fact that the purer material will be longest held in suspension. The deposited mass, when of proper consistency, is lifted from the vats and thrown upon thick, roughly-shaped blocks of chalk, which absorb a portion of the water, and in a short time so harden the cakes of whiting that they may be handled. They are then taken from the blocks and dried by exposure to the air in a kind of lattice-

framework. Paris-white is produced by the same method, but the material used is a finer, harder kind of carbonate of lime. This article is used for the painting of ceilings and walls in the better class of work. It will be remembered that this washed and purified chalk does not possess in itself the adhesive property of the lime-wash as described above, but, on the contrary, will be readily transferred to anything which may be brought in contact with it. To prevent this, gelatine in some form is added to the pigment to impart the adhesive power which the material lacks *per se*. In plain white ceilings sulphate of baryta, known as barytes, may be used with whiting or Paris-white. The following is the best mode of proceeding in such work we are capable of giving. The preparation of the wall for receiving the paint is, however, of prime importance, and that preliminary operation will be first described. We will suppose the wall to have been papered (that is, covered with paper-hangings), and further, that the removal of the paper has revealed cracks in the plaster more or less formidable in number and extent. If these cracks be so extensive as to require, in filling, the services of a plasterer, the labor of that craftsman must be had and obtained. A plasterer accustomed to this kind of work does not need to be told how to do it. Yet, supposing a case where the cracked plaster must be removed, and the task must be performed by the painter, the mode of operation is in this wise: Cut away clean down to the laths, and fill the opening with mortar made of plaster and water, no lime or sand. This filling should not be flush with the surface of the wall, but hol-

lowed out and depressed so as to receive another filling. This should stand a day or two to dry and harden, and then be filled flush with the surrounding surface with white mortar mixed with plaster-of-Paris, and nicely smoothed with a trowel.

The ordinary mode of procedure in the preparation of a wall for painting is to "point up"; that is, to fill the holes and cracks with a putty composed of equal parts of plaster and common whiting mixed with water and glue-size (that is, a weak solution of glue in water). The proper tools for this work of filling are a broad-bladed putty-knife or a small-pointed trowel and a water-brush, as the parts to be operated on must be kept wet; otherwise, the dry wall will take the moisture so quickly from the putty or filling as to prevent the necessary adhesion of the new with the old material. To insure the best results, the cracks should receive a second "going over" after the first application shall have had time to dry, in a measure. This filling will stick in the small cracks better than a preparation where lime is used, and may be worked upon at once; whereas, a preparation where lime is present will be apt to turn the paint yellow if painted before the mortar-filling be fairly dry.

Next in the order of proceeding—and a most important part of the process—is the application of a wash which shall furnish the proper "ground" or substratum on which the water-color shall rest and remain. This wash will have been prepared beforehand, and be ready for application so soon as the stopping process shall have been concluded. This wash or sizing, as it is called, is made thus: One

pound of white glue, one half pound of powdered alum, one quarter pound of bar-soap, white or brown, as may be convenient. These ingredients are to be dissolved separately in boiling water, and when the solution of each is complete, the soap-solution will be poured into the liquid glue, and to this the alum-solution will be added, slowly stirring the mixture all the time with a stick. This compound will be reduced or weakened with cold water to a proper consistency for application with a whitewash-brush. Care must be taken to touch every portion of the surface with this solution, to insure uniformity in the painted surface. All this preliminary work is supposed to have been performed with closed doors and windows on a fine bright day, and being finished, the doors and windows should be thrown open so as to make the surface ready for the coat of water-paint as quickly as possible.

The preparation of the paint is as follows: To fifteen pounds of Paris-white made with water into a stiff paste, smooth, and thoroughly mixed and incorporated, will be added one half pound of white glue in solution. This supposes the wall to be painted white. If a color be required, the coloring-matter must be added to the paint before the addition of the glue-size. The coloring pigment may not be put into the thick paint in a dry state, that is, in dry powder, but be first wet with water and thoroughly mixed and manipulated till there shall be no lumps in it, and then in the form of a thin wash be incorporated with the white mass. The glue then may be added, and the whole thinned down with water to a proper consistency for application with

a kalsomine-brush. In applying this water-paint a different style of manipulation is adopted from that commonly and properly practiced in oil-painting. That is to say, the water-paint on the wall must be left as the brush lays it on. No attempt must be made "to lay it off," as the phrase goes, to streak it so that the brush-marks may be even all one way, and parallel each with the other. It is recommended—a pure white wall or ceiling being the object—to add to the white mass a little ultramarine-blue previous to the addition of the glue-size. To dissolve a pound of white glue so as to obtain a perfect solution, such as is required for "kalsomining," is not an easy task. The material is stubborn, and will not readily solve. The easy way to bring it about is to pour upon the glue in a tight vessel sufficient water to cover or immerse it. Let this stand overnight, and the pouring upon it in the morning of boiling water will almost instantly give a perfect solution. In making a shade or tint for wall-painting in water-colors, it must be borne in mind that the color dried upon the wall will not be half as dark as in the mixture. For example, a tint where the blue ray is very decided in the mass of paint will dry out almost to whiteness on the wall. In cases where the wall is very much discolored, patched, unequal in surface, very hard in some places and soft and spongy in others, the easiest way to make a foundation for the "kalsomine" is to apply previously a thin coat of oil-paint.

The next step upward in this kind of painting is dignified as frescoing, miscalled fresco-painting ; which it is not in a

proper sense, but rather ornamenting, or decorating, with water-colors. This material, carbonate of lime, gives with colored pigments tones and shades the most delicate and the purest possible, from the lightest tint to the deep purples, reds, and browns. It is, therefore, more suitable and to be preferred for such work to oil-pigments, which are not only more fugitive in color, but which will, in the very nature of things, discolor, darken, and turn yellow and dingy. The attempt will not be made here to teach this art by written rules and directions. It can only be studied by the eye and learned through that organ. Example and practice are the only teachers worth heeding. In the best examples of domestic architecture this style of coloristic decoration is so common that plain walls and ceilings are now the exception and not the rule. This branch of painting is earnestly recommended to the attention of those who are striving to reach a place among artists, as the practice of it affords opportunity for the display of fine artistic talent.

This question of the finishing, or coloring, or painting of the wall in the rooms where we live is important and significant in more than one respect. *Æsthetically* viewed, it is important; but, from a sanitary point of view, infinitely more so. We have not now in prospect the health, as affected by colors through the medium of the eye, but the health as possibly affected by the materials used for such purposes, either in themselves or as they may be wrought upon by independent forces. Paper-hangings, which cover the walls of so many dwelling-places, because

of the paints which color them, are supposed by many to be sources of direful ills and diseases. So far, this theory must rest on mere assumption, as no case of sickness has yet been traced directly to this source. The writer has been at some pains to investigate this poisoning theory, on the assurance of its advocates that these direful springs of "woes unnumbered" do not exist in the paper, but in the pigments which are used to color and ornament the same—Paris-green having been fixed upon as the offending material. This question will be found somewhat fully discussed in succeeding chapters on "Paris-Green as a Pigment"; but, as we have a theory of our own to propound, we must allude to the subject again now and here. The case of poisoning most directly traceable to this cause occurred in London, and the facts were given to the public in the form of a report from a certain medical expert, eminent, as a matter of course, to a public board which is, or was, the equivalent of our Board of Health, or Health Commission. The learned doctor found the walls of this "chamber of horrors" covered with figured and painted paper, and among the many colors he detected—horrible to relate!—Paris-green, or something which looked like that deadly material. In the interest of science and the cause of humanity, the order was given: "Strip from the walls that painted death, and subject it to the analysis of my crucible, my acids, my alkalies, my precipitates, and my test-paper." The report—give me your ear, and I will whisper the sad tidings! The doctor found in the ashes of this incinerated paper poison enough to kill—how many? We have

forgotten just how many, but a dozen men, women, and children. Therefore, the occupants of this deadly chamber had been poisoned by the Paris-green present in the paper-hangings.

Ordinary mortals, not doctors, would have resolved the question thus: As was found in the paper-hangings all the green arsenite of copper that ever was probably put there, it follows as a matter of course that no poisoning or sickness could have been brought about through that material. The poisoning, or sickness, we recognize as a fact. The cause may have been in the room, in the house, in the street, in the neighborhood. If in the apartment, do not look for it in the pigments which figure or disfigure the paper. Look rather behind the flimsy covering, where mass after mass, coat after coat, of wetted flour in the form of adhesive paste has been piled up from year to year to rot and ferment in the moisture and warmth of a heated atmosphere, and to fill the walled-in space with seeds of disease which find favorable conditions for development in the throats and lungs and stomachs of the unfortunate dwellers therein. If you would remove the cause of disease, tear off the rotting sham, the painted pretense, which seems to be the thing it is not; scrape and clean the walls, wash thoroughly with water wherein is present carbolic acid or its equivalent, and paint with lime-water pigment, and you will give health and life, and light and sweetness, where all was dank and noisome before. Paper-hangings are offered, artistic in invention and design, elegant in style and finish, and to their proper employment in interior

ornamentation not a word is offered in objection. What we object to is the covering up, the burying of filth with, or under, painted paper—a cheap way of temporarily disposing of nastiness; and, while we are not of those who believe the odors which exhale from a stable or compost-heap can not be breathed without fatal results, we do believe that insidious dangers lurk around us, “both when we sleep and when we wake.”

CHAPTER XI.

PARIS-GREEN AS A PIGMENT.

THE beautiful pigment known in this country under the commercial name of *Paris-green*, in England as *emerald-green*, and on the Continent as *Scheele's green*, is, technically or scientifically speaking, an *arsenite of copper*, and consists of about three parts of copper to seven parts of arsenic.

Paris-green came into use in this country about thirty-five years ago, and reached its maximum of consumption as a paint some twenty years after. From that it fell into disfavor ; and there are to-day, throughout the country, many painters who have never used a brushful of it. Two causes operated to bring about this result : first, the many disagreeable properties and poisonous nature of the paint ; and, second, the improvements which were made in the production of chrome-green. These, since the decline of Paris-green, have been put upon the market under all the names which ingenuity could invent or devise about which there hung a sound suggestive of greenness. Yet it is ever a repetition of the same old thing, a compound of Prussian

blue and chrome-yellow ; and the unfortunate fact connected with the use of this *permanent color* is, that it begins to fade or change almost the moment the painter gives it the finishing touch with the brush. This fact having been demonstrated, during the past twenty years, to the comprehension of the dullest understanding, there are signs and symptoms that the old favorite is again to come to the front ; therefore this disquisition on the use of Paris-green.

It may be said, and with a good deal of pertinence, that the general use of green paints in this country evidences a meretricious taste ; and that the aim of those who take an interest in this subject should be directed, not to the presentation of brighter tones of this color, but rather to the discouraging of its general use in the external decoration of our domestic architecture. The answer to that proposition is as follows : We are treating this matter not from an æsthetical but from a practical standpoint. We look at it as we find it—not as we would wish to have it.

In our bright, hot climate, outside blinds are a necessity, particularly for isolated houses, and, indeed, for all domiciles not in crowded city streets ; and, notwithstanding all that has been said and written to the contrary, the public sense demands that these appendages to our windows shall be colored green. Recognizing this fact, it becomes us to call attention to that material which can give most satisfactory results in the use of green pigments for exterior color ornamentation.

There is practiced, in the matter of painting, generally,

a kind of so-called regard to saving, which, if exhibited in any other department of household economy, would be simply absurd and ridiculous. Imagine a house-owner contracting with a carpet-dealer to furnish him with carpets, with no other stipulation than simply that the same should be of green color ! Yet thousands of house-owners let out the painting of their blinds and shutters to those who will do the work for the least sum of money, without regard to the material to be used, except that it be green.

Now, a set of outside lattice-blinds may be painted with a green costing fifty cents a pound, or with one which costs only five or eight cents. Both these alike will fulfill the requirements—that is, all will be green ; but those coated with the expensive color will retain their freshness and brilliancy for a long time, while the others will change on the first exposure to sunshine.

Painting, so far as color is a prime object, is done to please the eye ; and, recognizing the fact that the public taste demands a green for outside blinds, we would have the pigment come into use for this purpose which offers to the eye the purest and most pleasing tone of that favorite color. Fortunately, we find united, in the material which is the subject of this article, the two most desirable properties—namely, brilliancy and durability.

The discovery of *Scheele's green* is most important, for the reason that it gives to the painter a new pigment, which not only reflects the purest green rays, but which is comparatively unfading and unchanging when exposed to the bleaching influences of light and other atmospheric forces.

So far, this material fulfills all the required conditions. It is brilliant and permanent. But, alas ! that fact, so patent in Nature's workings—that grand principle of compensation—is, unfortunately, nowhere more prominent than in colored pigments. We can not have the best without paying all it is worth ; and, in this instance, Nature has put so many bars and penalties in the way as to severely limit and, in many cases, to prohibit the use of this most beautiful paint.

As if to combine all the bad working qualities, Paris-green is not only coarse in grain and translucent (that is, without body or covering property), but it is a non-drier to the last degree. Vehicles, such as varnish, drying japan, patent drier, and all the liquid driers, seem to lose their peculiar qualities in presence of this brilliant and unapproachable color. Its defects are many, its merits few ; but these few throw all its would-be competitors so far in the shade, that it stands preëminent, unrivaled ; and for this reason must, in the opinion of the writer, again come into general use.

As we propose to treat the subject with special reference to the merits and defects of this chemical product as a paint, a description of the mode of proceeding in its manufacture will be omitted, except to simply note the fact that it precipitates from its solution in a crystalline form, which will account for some of its peculiarities of working when applied with a paint-brush. These crystals differ from each other in shape and size as do the grains of sand on the seashore ; and the paint may, in its form and structure,

not inaptly be compared to that abundant material. Let the uninitiated painter imagine the difficulty of coating a comparatively smooth surface with a portion of fine sand mixed in oil, and he will have some idea of one of the most formidable difficulties in the way of the use of Paris-green as an oil-paint. But why not grind it fine, and so overcome this formidable objection? Ay, there's the rub! These crystals are transparent, and only reflect their beautiful color when unbroken; therefore, it is absolutely necessary, in order to produce the best results, that they be put upon the work without further breaking or powdering.

It may be a help rather than a hindrance to those who are unacquainted with the peculiar nature of this pigment, to associate it in the mind with some familiar substance, and so, by comparison, get a better idea of its nature and working qualities. Very fine sand, or smalt, such as is used in hour-glasses, seems more analogous to Paris-green, in appearance and granular character, than anything we can liken it to; and the crushing of the crystals of the paint produces the same result as would follow the grinding of blue-glass smalt on a stone under a muller. Just in proportion as the grains are broken they lose the property of reflecting pure green light. The difficulty of covering a surface uniformly with these particles of green, transparent sand can hardly be over-estimated; and, if the work were to be subjected to close inspection, it would be almost impossible to complete it in a satisfactory manner. Fine paint will adhere to a painted surface with a tenacity entirely foreign to the nature of this sand-like substance. To

sum up all its defects, we would say : Paris-green works badly under the brush ; is translucent, and therefore will not cover the under-coating ; has a most perverse habit of running away from the work after it has been put on with the utmost care ; and, as a drier, is the worst of all things.

Much has been said having reference to the poisonous nature of *arsenite of copper* ; and, as this branch of the subject is important, we propose to discuss it in the light of experience, reason, and common-sense. One would conclude—putting faith in the marvelous *facts* given to the reading world from time to time by scientists—that an inhalation of air which had been in contact with Paris-green would prove more deadly than the breath of the fabled upas-tree. Harrowing tales are periodically told of whole families being poisoned almost to death because of the presence of this terrible pigment in the paper-hangings. The reading of a paper at a recent scientific convention, on the possible consequences of the use of Paris-green in the destruction of the potato-beetle, called forth this remark from one of the learned professors : “There are well-authenticated cases of poisoning by arsenic through the Paris-green present as a stain on the wall-paper.” Now, we submit that such a statement might have been expected from a medical doctor, whose practice and profession is to a degree, in the nature of things, empirical ; but from a scientist such a statement is surprising. Until it shall be shown that there inheres in this pigment a power to overcome the *vis inertiae* of the matter—to break the bonds whereby it is held to the paper, and afterward diffuse itself

as a vapor throughout the atmosphere—we hold that it is contrary to reason and common-sense to conclude that *any* case of sickness is because of the presence of Paris-green in the paper which covers the wall. Let it be borne in mind that much of the arsenite of copper used on paper-hangings is highly sophisticated, or adulterated, with sulphate of baryta, or carbonate of lime, or *terra alba*, or some other innocuous substance ; and that the quantity of arsenic present is very small. This question of quantity is highly important ; because, if it can be demonstrated that one of those reputed “chambers of horrors” did not contain so much arsenious acid as is exhibited in a single bottle of chill-and-fever medicine, the poisoning theory must fail for lack of probabilities. No one, we hope, will contend that the mere presence of arsenic (as, for instance, the glass bottle which holds the stock of the apothecary) would produce paralysis, or any symptom of metallic poisoning. Such a theory would beat homœopathy and spirit-rapping out of sight ! The uncontradicted assertion is public that arsenic may be administered in ever-increasing doses until the human system can bear frightful quantities with apparent impunity. This being admitted, it would seem to follow that all the green arsenite of copper which would be present in any ordinary apartment as coloring-matter on the paper-hangings, might be eaten by members of the family with their bread and butter, in the course of a month, without danger of serious results. To render this poisoning theory reasonable, it must be shown, not only that the pigment has the property of volatilization *per se*, but that it has,

moreover, the power to escape from the bonds which confine it to the surface of the paper—to break itself free from the tenacious medium which surrounds and incloses each particular crystal, and to float or fly in the atmosphere, and find its way into the system, either through the lungs or the skin, in such quantities as to produce the symptoms of poisoning by arsenic.

There is no reason to suppose that this salt undergoes any change when exposed to the air; but, on the contrary, there is proof positive and abundant that it is inert and unchangeable to the last degree, even as much so as quartz-crystals or silica. The writer has a sample of Paris-green which was made in England more than twenty-five years ago. It has been exposed every day to sunlight, and much of the time to the air, yet, so far as the eye can discern, it has undergone no change. It reflects the same bright-green color, has the same sand-like, granular character, and to all appearances is in the same shape and condition as when it first came to hand—as unchanged even as the glass vessel which contains it. Again, if Paris-green be volatilizable *per se*, how is it possible that workmen can live for years in good health in an atmosphere which must be, in the nature of things, perfectly saturated with this virulent poison—namely, the Paris-green factories, where thousands of pounds of it are spread out so as to expose the greatest amount of surface to the action of heated air in confined rooms? It is not unusual in these factories to see spread upon drying-tables, at one time, from six to eight thousand pounds of Paris-green, the vapor rising from the same being like unto a fog

in all parts of the room. The workmen go into these rooms, and stand around these tables, stirring the mass for hours together without any inconvenience, and frequently may be seen in cold weather sitting close beside a steaming-hot table eating their dinners. In the process of passing the dry green through bolting-cloths, the workmen stand for hours together breathing an atmosphere visibly colored with fine particles of green, and, notwithstanding the precautions used to prevent the inhaling of the dust, a considerable portion finds its way into the system through the mouth and nostrils.

As said in the beginning, we “propose to look at this question in the light of experience, reason, and common-sense,” and, in view of the facts presented, we believe the reader will justify us in the declaration that no well-authenticated case exists of poisoning by Paris-green because of the presence of that pigment in the paper-covering of the walls of occupied apartments; moreover, that this poisoning theory is entirely baseless, unless it can be shown that *arsenite of copper* is fatal in small doses, yet harmless when taken in large ones.

That Paris-green is a poison, and, when taken in sufficient quantities, a deadly poison, no one familiar with its composition will have the hardihood to deny. Too much care can not be observed in keeping, handling, and using it; yet there is no sense in making a bugbear of it, and frightening people from its use by attributing to it qualities and properties which it does not possess. Paris-green, when employed as an oil-paint, is perfectly harmless, except that

it acts as an irritant in contact with the flesh if allowed long to remain so ; for example, when it is permitted to accumulate under and around the finger-nails. Every workman, however, is not obnoxious to this peculiar effect, and the irritation may in *all* cases be avoided by extraordinary care in washing the paint from the hands ; or prevented, by wearing gloves when using it.

Paris-green may be used either as a body-color, or as a glazing in the way that lakes and carmines are used in coach and carriage work. Used as a body-color, it must be applied in successive coats, so as to conceal the underneath (or ground) color. The mode of proceeding in this practice is as follows : The work, whether old or new, must first be coated with a body-green which, in tone of color, resembles most closely the Paris-green. This should be dry and hard before the application of the first coat of the finishing color, so that the last coat may "bear out" as well as possible, Paris-green having a tendency to *flat* in drying, which is at times extremely annoying. As a glazing, it may be put on over any color which fancy may dictate or suggest. The writer has produced most satisfactory results on a ground of yellow ochre, which is a dull orange-color. Any tone of brilliant green may be obtained through the use of Paris-green as a glazing, by the use of darker or lighter under-coats, ranging from the darkest green of the pine to the very lightest hues exhibited in vegetable growths in the earliest vernal season. It will, of course, be brighter and purer in tone than any of the greens which Nature exhibits in natural objects, and will make dull, by com-

parison, the brightest of the grass-greens, whether shown in well-kept lawn, or by country roadside, or in richest meadow-bottom. For the information of those unacquainted with the significance of terms used in the shop, we would explain that glazing—used in reference to painting—means the putting on of a transparent color over a ground of opaque or body-color. It belongs particularly to carriage-painting. Those most beautiful scarlets, carmines, and crimsons, exhibited on the running-gear of fancy road-wagons and other wheeled vehicles, are produced in this way. In glazing, one or two or three coats may be put on over the body-color, as circumstances may seem to require. The non-drying property of this pigment has before been referred to; and, because of this, some days should elapse after the first coat of Paris-green before the finishing coat. It had best stand two weeks, or even longer, if there be no hurry for the work. The paint must not be too thin, and only as much must be put on the surface as will stay there without trickling. Carelessness in this has saddened the face of many an unfortunate painter who, coming to take a fond look at his work next morning, has found the bulk of his paint on the floor, and the rest hanging in bead-like drops to the lower edges of the blind-slats. Despair is the only proper refuge in a case of this kind.

Among the many objections to the use of this material, we neglected to mention the cost—which is important, as Paris-green is the most expensive color used in ordinary house-painting. It can not be spread out (extended) like body-colors (which will bear extreme grinding), by reason

of its translucency, its want of covering property. The prime cost of this green is about twice as much as chrome-green, under any of its endless names, and a much larger quantity is required to spread over a given surface. Its high cost, too, offers great temptation to extensive adulteration with worthless materials; and, as a rule, Paris-green ground in oil is not offered in a pure state.

As mentioned in the concluding sentence in the first part of this article, we had been conducting a series of experiments with a view to preparing Paris-green for the hands of the consumer, freed from some of the objectionable features which have rendered it so formidable to the painter, and which have almost driven it out of use. We hoped to overcome its non-drying property to that degree that we could safely recommend clear raw oil for use in thinning, and to lessen, if not altogether do away with, its tendency to run, or trickle, from the surface; and, what is most important, to present it in the fullness of its pure green color. Our course included more than one hundred experiments, and concluded by painting a set of blinds from the rear of a first-class city house. These were all accurately measured, and the paint in each of three successive coats carefully weighed. The cost, both of labor and material, will be given, so that the amount to be expended in a job of this kind may be known beforehand.

We got the best results through applying the green as a glazing over a ground of yellow ochre, as before stated—one coat of body-color and two coats of Paris-green. In this, moreover, there must not be any extra effort made to

cover the under-coat. A solid job must not be looked for, but a transparent glazing through which the body-color may be seen.

This fact can not be too constantly kept in view, namely, that blinds are painted to please the sight and not the sense of touch ; and it is not of the slightest consequence however rough they may be, so long as they fulfill the important requisition—which is, to please the eye. It must be borne in mind, too, that they are not to be viewed through a microscope, or with spectacles, but from a distance, as seen in their proper places, hanging to the window-frames. No matter how coarse or ill-conditioned they may look when standing in the paint-shop ; if they have a good effect when exhibited in their proper belongings, more need not be asked or looked for. Painters can hardly divest themselves of the idea that work of this kind must appear well when viewed in close proximity. An artist, however, takes you away from the canvas, when he would exhibit his picture, in order to get the best possible effect. Things viewed too closely often appear harsh and repulsive, but, when softened by distance, become lovely and enchanting. If objection be made that the surface of the work is rough, the answer will be : “ What matter ? The coarser the better, so long as the best results of painting may be attained thereby. The work is not painted to be felt of, but to be looked at.”

Outside blinds, whether new or old, should have not less than three coats, and new blinds will be the better for having four ; that is, first a coat of blue or lead-color, then a

coat of body-color, followed by two coatings of Paris-green, used as a glazing. The lead coat may stand three days, and the second four or five days ; but two weeks should elapse between the first and second coats of the finishing color. Do not sandpaper the work in any part of the process, because the Paris-green will be less apt to run on a rough than on a smooth surface.

A good, well-worn brush must be used in applying the Paris-green, but no extraordinary care need be exhibited in the effort to *make it cover*, that result being impossible, and not desirable. The paint must be thin enough to work easily, but not too thin ; and it should be frequently stirred in the pot, so that the coarser particles of the color may not escape, and be found in the end settled in a hard cake at the bottom.

The coat of body-color, or groundwork, should bear out with a kind of half-gloss. A little hard-drying varnish used in this coat will give a better foundation for the first coat of green finishing color. The two coats of Paris-green must be put on thinned with clear raw oil. No drier of any kind may be used in thinning, and boiled oil injures the delicacy and purity of the tone.

Those painters who are apt to see “a lion in the way,” when anything is presented out of the beaten track, will readily conjure up a host of difficulties in, and objections to, the use of Paris-green. “What !” they will exclaim, “paint blinds with this poisonous stuff, which is so coarse that you must be constantly stirring it with a stick to keep it from sinking, and so transparent that it will not cover

even over its own color, and which threatens to run away from the work if a drop too much be applied ?” etc. Just so, timid disciple. But who ever yet got any good thing without working for it ? “He that would win must labor for the prize !” On the other hand, think of what will have been gained when all these difficulties shall have been surmounted. A color so brilliant, deep, rich, and velvety, that all other so-called greens grow sick in comparison, and give up even the pretense of being entitled to bear the name of green ; and then, so permanent, so durable, so unchangeable ! No fading out to faintness in the sunshine, and darkening to blackness in the shadow ; no two sides to every blind, one “sicklied o’er with a pale” suspicion of color, and the other grim with darkness. This permanence, too, is not a matter of a single season, but continues right on, through winter and summer, from year to year ; and so long as a single particle of the pigment shall remain on the painted surface, that single particle will continue to reflect its original emerald color. Is the accomplishment of such a result not worth some extra pains and labor ?

The set of blinds before mentioned were of dimensions as follows : three pairs were ten feet long, three were seven feet long, three were five, and three four feet, respectively. They had a uniform width of twenty-one inches. It will be seen that these all were the equivalent of twelve pairs of blinds six feet six inches high by twenty-one inches wide, each pair. This would be about a fair average for outside blinds, as they show on town and country houses. These

blinds were first painted with a coat of dark chrome or body-green, about six pounds of color being consumed in the work. After standing four days, the first coat of Paris-green was put on. Fifteen pounds of green, as it comes in the cans when ground in oil, was thinned with six pounds of pure raw linseed-oil, and the whole of this mixture was consumed. After standing ten days, the finishing coat was put on, and in this were used nine and one half pounds of thick color and about four pounds of raw oil for thinning.

The following recapitulation, given in figures, will show at a glance the cost of material for painting blinds with pure Paris-green :

Twelve pairs, 6 feet 6 inches \times 21 inches ; blinds painted three coats.

1st coat,	6	pounds	body color,	at 25 cts.....	\$1 50	
2d coat, {	15	"	Paris-green,	at 45 cts....	\$6 75	
	6	"	raw oil,	at 12 cts....	72	7 47
3d coat, {	9½	"	Paris-green,	at 45 cts....	4 27	
	4	"	raw oil,	at 12 cts....	48	4 75
Total.....						\$13 72

This gives about one dollar and fifteen cents as the cost of the paint for three coats on a single pair of six feet by twenty-one inches blinds. Of course, this is predicated upon the supposition that the very best material, prepared in the best manner, will be used. Indeed, nothing short of this will produce any such result ; and it is entirely safe to say that a good job of Paris-green can not be effected with the color as usually sold in the shops. No figures are given as to cost of labor, as this must depend, in a great

degree, on time, place, and circumstances. An old and experienced city painter names three dollars per pair as a fair price for one coat of body-color and two of Paris-green on ordinary outside blinds. We would suggest to those painters who have never essayed a trial of Paris-green to make one trial, under favorable conditions ; and to those who have heretofore used and discarded it, to bring it back into use as soon as possible, because it is, after all, the only green for outside work which gives real satisfaction.

CHAPTER XII.

GRAINING AS A FINE ART.

“THE Art of Imitating Colored and Fancy Woods, taught in Twelve Easy Lessons,” would be a “taking” caption to this chapter, and some credulous souls would certainly believe it true. We are sorry to dispel such simple and childlike faith ; but a regard for truth and common-sense compels us to declare that, to reach the goal of success—in this as in all other branches of the art of painting—one must travel the long road of patient study, close observation, and practice, practice, practice. To imitate with colors the veins, grains, and figures in a piece of fancy wood, requires the same faculties, the same development of perceptive power, the same care, and skill, and talent, as are required to portray the lineaments of the human face ; not in the same degree, perhaps, but in the same direction.

As no two faces are alike, so no two pieces of wood are exactly similar. For this reason the grainer must always be a student, always a learner. Oak-wood, for example, presents all neutral browns, from Vandyke-brown to almost white. One may see in it a knot which is the color of

charcoal, and albino specimens which are quite devoid of color; between these two extremes may be found every possible shade of red and yellow brown. Light oak requires a groundwork of palest straw-color, while dark oak is best imitated on a ground of red, almost bright enough for mahogany. White oak is almost devoid of color, while the Western oak is quite a foxy red; and no jury of expert grainers would agree as to what is the average color of the wood, because each one would have a prejudice or predilection for some particular tone which he had unconsciously fixed in his mind, and which he had habitually accustomed himself to impart to his work. As a rule, light oak graining presents too much of the yellow, and dark oak is represented with too little of the red tone. In other words, light oak is made too bright, and dark oak not bright enough.

The novice must not expect to make even a tolerable imitation of any fancy or common wood by the simple application of graining color to a proper ground. The operation is threefold, and in some cases even more than that. Finished natural woods do not reflect their color superficially altogether. They have depth, as well as tone and figure; and, in colored imitations of the same, these facts and conditions must be respected, and the operation must proceed in accordance therewith. The requisites are: a solid, smooth groundwork, a coat of graining color on that whereby may be shown the grain and figures of the wood, and on that a glazing of transparent color to show the lights and shades, and to give the required depth and transparency. It must not be forgotten that the intent in grain-

ing is not to represent the wood in its natural colors, but in the tones and shades it puts on when varnished or polished. The cold, blackish gray of unfinished black-walnut, for instance, is altogether different from the warm, reddish brown which this wood reflects when varnished or polished. There is, too, a rich undertone of yellowish red, which glows out from beneath the surface, the presence of which would not be suspected in the natural growth as it comes from the planer. Woods, too, change color when exposed to the light and to other atmospheric influences, and put on a richer, mellower, softer tone with age and use. These conditions must be known and respected, too, if the learner would become a successful imitator of natural woods. In this, as in other branches of imitative art, Nature must not be followed too closely; because Nature, in her endless variety, presents many specimens which the painter would rather avoid than imitate.

The animal-painter would not select from the flock the shabby specimens to show on his canvas; so, the imitator of fancy woods should select for imitation the best which Nature offers—those which are most pleasing to the eye, and most interesting as objects of study and observation. Natural deformities, except as curiosities, are not worth perpetuating.

CHAPTER XIII.

PAINTED IMITATIONS OF COLORED WOODS, TECHNICALLY CALLED GRAINING.

THE art of imitating the grain, knots, and colors of fancy woods is, like all painting not merely mechanical, acquired by study, close observation, and long-continued and constant practice. Success in this line is dependent on the possession, or development rather, of those faculties without which a person should hardly adopt this profession as a specialty. An eye prompt in detecting similarity in shades and hues of color, imitative power, and delicate manipulation, are indispensable in the make-up of a good grainer.

Formerly the house-painter was supposed to include among his accomplishments the art of graining as well as sign-painting, gilding, and all other branches of the trade ; but of late years it has become the custom for some to give undivided attention to those several branches for which they individually have, or seem to have, a special faculty, taste, or predilection. Therefore, certain workmen designate themselves as “grainers to the trade,” “sign-writers

to the trade," etc. This custom can obtain, of course, only in the larger places, there not being in small towns and villages sufficient work in any one branch to permit workmen to devote themselves entirely to a special department.

To teach the art of imitating the grain of the various woods used in domestic architecture by a set of written rules and directions, would be as much an impossibility as to make a finished musician by teaching the theory of sound. Even a tolerable degree of perfection in the art can be obtained only by much practice and close observation; but there is a great deal that can be told, and much that can be acquired, more easily than by practice, the same being the knowledge experimentally gained by those who, with skill and custom, have become perfected in this particular branch of the art of painting.

The disposition for grained work, which at one time declined materially, has of late years revived, and the fashion for this kind of painting is now more prevalent and general than ever before, the difference being simply that certain kinds of woods, as mahogany, rosewood, and maple, which were once much desired, have been supplanted by an affection for light and dark oak and black-walnut. The number and variety of brushes and other tools used in graining can be shown herein with sufficient accuracy of description to enable the novice to order what he will necessarily require in case he shall be disposed to practice the imitative art.

Formerly the art of graining in oil-colors was practiced by comparatively few, and the knowledge of the pig-

ments and other materials used was a real or pretended secret. The writer has seen a professed grainer involve himself in the utmost secrecy, and work in a mysterious way, when simply mixing common brown wax with heated oil and turpentine to make what is called "megilp." These little "tricks of the trade," the quackery of the professors, are much less common than in younger times. The printing age and the book-making mania have brought to light most of those occult compoundings, and placed what was once hidden knowledge within the reach of all. There is truly no trickery in art. Its best results are gained only by patient labor; and the artist who claims to accomplish these by some secret process known only to himself, may be set down as a quack. In these, our times, not only are there no mysterious compoundings, but the would-be grainer does not of necessity require a knowledge of the simple names of the materials which he would use, because of the fact that ready-made graining colors, which require only to be thinned to fit them for use, are placed within his easy reach. Therefore, the greatest of the obstacles in the way of the practice of graining, by those who have not had the advantages of practical instruction in the art, is removed; and the would-be grainer has only to learn the theory of "how to do it," and all the rest comes by practice and observation.

When and wherever in the following pages rules and proportions are given for producing certain tones and tints for groundwork, or for other purposes, the reader will bear in mind the fact that the looked-for results can not be

reached by the use of materials which differ from those given, either in kind or quality. Every painter should readily see the necessity of adopting some absolute standard, otherwise we shall all be working in the dark. When we say raw Italian sienna tinted with white-lead will give the best groundwork for light oak graining, we beg the reader not to expect to produce that result with lead that is white-lead only in name, and with sienna which is a clay-colored mixture, as unlike the genuine Italian sienna as the sale of it is unlike honest dealing. No painter should ever purchase a package of ground color which does not bear upon it the name and guarantee of some well-known responsible manufacturer. The consumer should know, as a rule, that the ground paints sold throughout the country are not genuine. The packages do not contain, even in a highly adulterated state, the article which is indicated by the label or brand on the exterior thereof.

White-lead, so well known by its familiar name, is the most important article in the stock of the painter. Its unequalled density, opacity, and easy working qualities, have made it the favorite pigment with the trade, and all attempts to supersede it have been, so far, entirely without success. The demand for it is always increasing, and new establishments are from time to time erected in different parts of the country to supply the growing want. No article in common use probably has been adulterated to such a shameful extent as has this indispensable pigment. The fact that its purity can be ascertained by chemical or mechanical tests, which are known only to the initiated, has

rendered this adulteration easy, and its detection extremely difficult; and to-day the only guarantee which the purchaser has of the genuineness of the paint is the name of the maker which the containing package bears. This, even, is not an absolute security, because the marks and brands of well-known manufacturers have been fraudulently counterfeited and imitated. White-lead is what is known in trade as a *leading* article. What sugar is to the grocer, white-lead is to the seller of paints. It is almost everywhere sold at a merely nominal profit; and the tradesman readily accepts anything bearing the name of pure white-lead which he can sell at the price of the genuine article. The result is, a satisfactory enhancement of the seller's profit, but extreme disappointment on the part of the consumer. Thousands of tons of so-called white-lead are annually sold in the United States which do not contain a single grain of that material. A detailed statement of the ways and means whereby this fraud upon the consumer is effected, would seem hardly necessary here, and we rest upon a simple statement of the fact, as being all that is necessary or important.

In giving directions for reproducing these tints, it becomes, of course, absolutely necessary that some base of proceedings be first established, otherwise our results would be as uncertain as the wind. It would be worse than vanity for the writer to give directions for the producing a given tone of buff, for instance, if the materials necessary to the mixture were not the same in *quality* as well as *quantity*. If the white, which must form the base and bulk of the

mixture, be not white-lead, but only a fictitious imitation of it, and the quantity of color necessary to reproduce the given tint be used, the result, of course, would be entirely unexpected. At the risk of being charged with unnecessary repetition, the writer would again call the attention of the consumer to the fact that all painting, to be done economically, must be performed with the best materials. If white-lead be required to paint a house, get *pure lead*, at whatever cost. If yellow ochre is demanded, get it pure, if you can. Every painter and consumer will do well to lay to heart the following axioms :

1. The purer the paint, and the better it is of its kind, the less it costs to do painting, of whatever grade or degree.
2. A job of painting, of whatever character, can be performed at a less first cost of money and time with the best rather than with the cheapest paints.

Every man of common-sense can understand that buying sugar which is half sand, because the nominal price is only two thirds that of sugar, is not an economical proceeding. Yet painters and other consumers buy paints every day which are more than half sand, or some other worthless material, simply because the nominal price is less than that of pure color. It ought not to require a very brilliant intellect to comprehend the fact that, in distributing a pound of pure color through ten pounds of so-called ground paints, the consumer has to pay for ten packages instead of one, and ten freights and ten profits when he should pay only one. This digression is made in the hope of impressing the painter, once for all, with the absolute necessity of supply-

ing himself with the purest materials. With such the best results are possible. Without them we need hardly hope for success. As a rule, it will be well to avoid many-hued labels. These are often used with intent to deceive. Truth can commonly be told on plain white paper.

CHAPTER XIV.

GROUND AND GRAINING COLORS.

LOOKING at a wainscot or wall of oak and black-walnut in alternate strips, one sees a variety of tints, from pale yellow to light umber tone in the oak, and from light red-yellow-brown to deepest black-brown in the walnut. It becomes necessary, therefore, in order to avoid the extraordinary labor of making a ground for each separate width or strip, to put on such a color for the ground of either wood as will enable the workman to show the *lightest* colors which the woods respectively present, trusting to a greater depth and body of graining color to produce the darker shades.

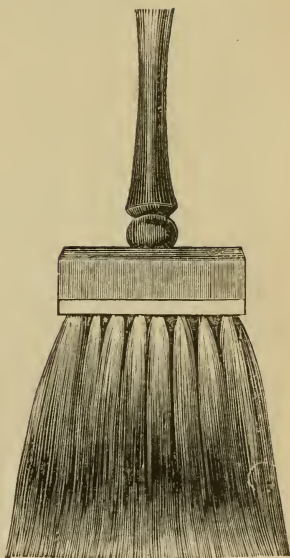
The ground-color for light oak, maple, satinwood, chestnut, and ash, may be the same. Black-walnut ground, of course, differs materially from the others mentioned, both in tone and depth of color ; but it would not be a difficult task for an expert to make a fair job of black-walnut on the maple ground. Attention is called to this fact to show that the color of the groundwork is, after all, of less consequence than it would seem, supposing it to be light enough, as its brightness can always be subdued by the use of a greater

quantity of the dark graining-color and the glazing coat. It is, however, a matter of prime importance that the surface of the work shall be smooth, solid, and uniform in color, in order that the graining-color shall comb cleanly and wipe out clearly and brightly. The graining-colors also should be compounded of the best Italian siennas, or Turkey umber, or German Vandyke-brown, as the case may require. If common colors be used, such as are generally sold in the shops in the country, the work will present a muddy, cloudy appearance, alike inartistic and unsatisfactory. In the matter of economy, the best colors are altogether preferable, for the reason that a dollar's worth of the pure colors will be sufficient to cover a much larger surface than three dollars' worth of impure, so-called cheap colors. In the first case the best results are possible ; in the second they are utterly unattainable.

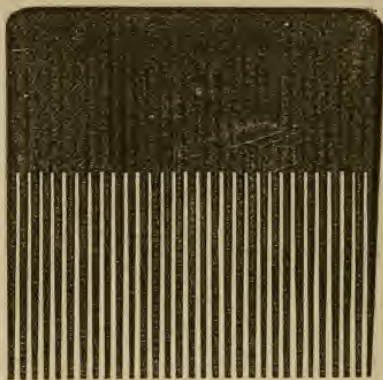
CHAPTER XV.

TOOLS REQUIRED FOR GRAINING.

THERE are certain tools and brushes indispensable in the production of painted imitations of fancy woods, without which even the most expert professional grainer would be at a loss, and would labor under difficulties. Yet it must be understood that such a workman, through use and skill, by means of a cunning hand and practiced eye, may and does produce effects with means and appliances which the novice could hardly find use for. A good workman may work with indifferent tools; but the unskilled must avail himself of all the advantages which the best tools and materials place within his reach. First in im-

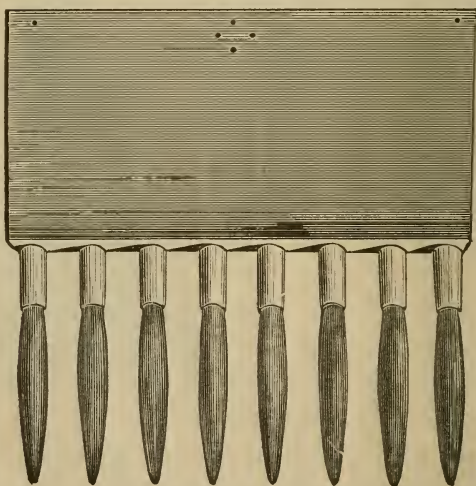


Badger-hair Blender or Softener.



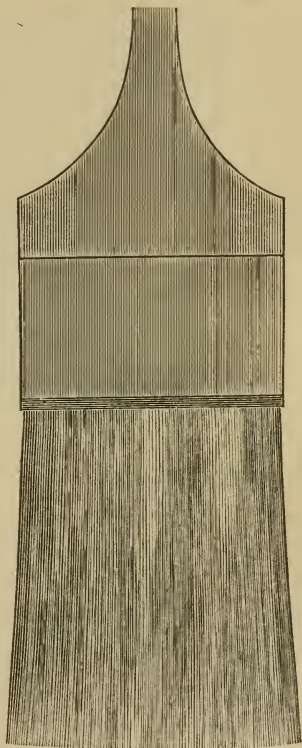
Steel Graining-Comb.

portance, after the brushes necessary for applying the grain-
ing-color to the groundwork, comes a badger-hair blender



Piped Maple Over- (or Top-) Grainer.

and softener (a cut of which is shown on page 125) ; second, steel graining-combs. A set of these comprises twelve combs, three of which are one inch wide, three two inches, three three inches, and three four inches wide. Each comb in the several widths varies from its companions in the size of the teeth, one in each of the four widths being fine, one medium, and one coarse. Formerly, a few leather combs were considered indispensable ; but now, when coarse combing with clear, distinct grain is required, the result is effected by the use of one of the coarsest combs, the teeth of the same being covered with a piece of cotton rag or cloth. This is in every respect the equivalent of a leather comb. This short list, with a top- or over-grainer (a drawing of which is given), comprises all the extraordinary tools required, the rest being common in and about every ordinary paint-shop, and consisting of a painter's duster, two or three flat bristle or fitch brushes, and a piece of clean cotton rag. For graining



Oak Over- (or Top-) Grainer.

maple, a tool called a cutter is necessary, and that will be described under the head of "Maple Graining." The cost of this set of grainer's tools will be, at the outside, say five or six dollars. It must not be understood that for



Camel's-hair Cutter for Maple Graining.

all kinds of work no other brushes are required or made use of, for the reason that very extended surfaces, such as large stores or warerooms, where the work is to be mostly plain, and when it is necessary to get over the largest possible space in the least possible time, require the use of larger brushes. These, however, will be noted each in its appropriate place. The reader will not take exception, certainly, to the remark that, to give the names and descriptions of the tools and brushes, is much easier than to teach the lesson of how to use them.

CHAPTER XVI.

LIGHT-OAK GRAINING.

THE ground-color recommended for the imitation of light oak is produced by the use of white-lead and pure raw Italian sienna. Golden ochre will do in place of sienna, but does not produce so clear and soft a tint. The too common use of chrome-yellow is deprecated, for the reason that the general tendency is to make light-oak grained work too yellow. It will be seen, by studying the natural wood, that it reflects, mainly, none of the chrome-yellow tone. The yellow observable in finished oak furniture is derived in a great measure from the successive coats of varnish used in the finishing process.

The opinion obtains among professional grainers that the *graining-color* should be mixed with special reference to the ground. This is true in a measure, but has not so much significance as is generally ascribed to it. In fact, the graining-color is less important than the groundwork, as a fair job of both light and dark oak may be performed with the dark-oak graining-color, supposing the ground to be suitable in either case. In making a ground-color with

white-lead and raw sienna, care must be taken to procure the true Italian article, as the so-called American substitute will give a muddy color, quite unlike what is required to secure a good job.

The beginner will not be led away with the flattering thought that his first attempt, however gratifying to his own self-love, will result in a very close imitation of the wood, which he will probably caricature rather than copy. The lights which he will wipe out will stare stiffly at him when he steps back to indulge in a look at his handiwork, and the shades will frown as if in mockery of his maiden effort; but patient labor and striving for success will overcome most obstacles, and the smallest amount of merit never goes wholly unrewarded. The study for the learner is not to copy at first the natural wood, but the examples of some first-class artist in this line. Mannerism should be avoided, and a habit of putting in always the same kind and show of work in certain places, as some do. Let there be the greatest variety consistent with good taste. Violent contrasts are to be avoided. The same general tone of color will be preserved throughout. It will not do to have one panel on a door dark, the others being light. True, this might happen in a door of natural wood, but it would not be desirable.

Referring to remarks on page 124 concerning the preparation of the work for the reception of color, and supposing the groundwork to exhibit the proper tint, and the learner to have supplied himself with a can of ready-made graining-color, he is instructed to take therefrom what-

ever quantity may be required to do the work in hand, covering the remaining color with turpentine to keep it fresh, and the can to exclude the dust and to prevent the evaporation of the turpentine. That portion of the color intended for immediate use must be thinned with oil and turpentine to a proper consistency, which will be ascertained by trying it on the work. A portion of boiled oil will be required in the thinning, but only so much as may be necessary to hold the color back from drying too quickly. Except to secure this, there is no advantage to be gained in using it. The work will not be any more durable because of the use of an undue proportion of oil in the thinning, and the varnish-coat will be decidedly better on a surface without gloss. Ordinarily, graining-color is mixed with reference to drying, so as to be ready on the following day for the glazing-coat. If it be desirable to grain and glaze and varnish on the same day, it may be done by the use of japan gold-size, or good japan drier; but, as much of the japan in market now is made without shellac, its use is not advised, except in cases where the operator is assured of its quality and genuineness.

The beginner or learner will at first fall into the error of mixing his graining-color too thick—that is, he will use too little thinning; but, as this is most easily remedied, it is preferable to the other extreme. The quantity of color required for one side of a door is almost infinitesimal. Too much color will make the work look muddy and slovenly. It is common to *rub in*—that is, paint—all the panels and panel-moldings before proceeding to put in the work, as

the color wipes out better after it has set a little. If the color be quick-drying, however, care must be taken not to rub in too much at once ; because, in such case, the work will not comb well or wipe out cleanly. It will work "claggy," to use the grainer's expression. That portion of the surface which is to receive the "veins" or "sap" must not be combed until after the work is put in ; while that kind of work called "dapples" requires the combing to be done before the wiping out of the lights.

It will be observed that the "technical" or trade terms used throughout this work are those in common use among English grainers, for the reason that most of the best workmen in this line are Englishmen, who have brought with them to this country the knowledge and skill acquired on the other side, where a rigid system of apprenticeship renders good workmen much more possible than with us. The laxity of our system, or rather lack of system, of apprenticeship, is a bar in the way of turning out really finished workmen in almost any of the trades.

Allusion has already been made to the difficulties in the way of teaching, by means of written words, any branch of art, a knowledge of which must, after all is said, really be acquired through the perceptive faculties. An hour of practical demonstration would be better than a volume of written instructions. To lead the half-taught learner toward perfection were comparatively easy ; but to teach a language that has no alphabet and no grammar may perhaps prove more fruitless than the writer even anticipates. With a view to the fullest elucidation of the process, and to

make it, if possible, comprehensible to the greatest novice, to him who has never seen a job of graining performed, it is proposed to begin with the "rubbing in"—that is, applying the graining-color with a brush—and continue the operation, in regular order of procedure, to its completion.

The tools necessary in the first stage of the work are simply a moderately stiff brush, or sash-tool, for putting on the color; a dry paint-brush, or painter's duster, for cleaning up the corners, molds, and beads—supposing too much color may have adhered thereto; a soft, clean, worn cotton rag for wiping out; and a set of combs for the combing. These comprise all which are really required for the first operation. In practice, the term "rubbing in" will be better understood, the performance being much more like rubbing the color into the groundwork than like painting, in the ordinary acceptance of the word.

All preliminaries being completed, it is now supposed that the door, that being the subject to operate upon, is ready with its well sand-papered coat of pale-straw ground for the reception of the coat of oil graining-color. This must be rubbed in with the paint-brush so as to present a uniform surface. The beads, molds, and corners should be stippled with the bristle-ends of a dry brush, so as not to look dirty and muddy, as they surely will appear if not properly cleaned up. Too much color on any part of the door will make it look "blotchy" when finished. Care must be taken to have the color evenly distributed. In oak graining, it will be remembered, the grain is shown, not by adding a darker color, but by "wiping out," so as to leave

the groundwork clean, the color which remains representing the darker portion of the wood.

The panels will first receive attention, and it is advised, as a rule, to show on them rather plain work. There will be space enough on the rails and stiles to show the veined work, and much elaboration is not recommended ordinarily. The *corresponding* panels must be similar in character of graining, and *all* should present the same general appearance. The fact must be well understood that clean work, with simple straight combing, is much more respectable and workmanlike than an abortive attempt at display. Almost any man who knows the two ends of a paint-brush may, with proper ground and graining colors, turn off a job of grained work which will not offend good taste, even though it be not a very creditable imitation of the natural wood.

Supposing the panels are to be grained, as has been suggested, the first proceeding in order, after the application of the color, is to wipe off a part of it in streaks, from top to bottom, with a rag held loosely in the fingers, so as not to wipe the wood clean ; then to comb each in its turn with one of the fine combs lengthwise, repeating the operation in a similar manner with a comb still finer than that used in the first combing.

To this point the process will have been simply mechanical ; and such work may be performed by any house-painter who can paint a door with plain color in a workmanlike manner. Now it ceases to be mechanical, and becomes a branch of fine art.

The taking out of the lights is done by covering the thumb with a piece of cotton rag, and the thumb-nail becomes at once the most important and useful tool required in the operation. The broader lights will be wiped out with the fleshy part of the finger, and the finer lines with the covered nail of that most useful member, which performs so important a part that we can hardly imagine a good grainer without at least one thumb.

(The horn tool sometimes used for taking out the lights will be described hereafter.)

That portion of the rag which covers the thumb will, of course, soon become saturated with color, and so will cease to be effective in wiping cleanly. This necessitates the constant uncovering of the thumb, and the recovering it with a clean portion of the rag. When the whole of the rag shall become saturated with color, it must be thrown aside, and its place supplied with a clean piece.

The first attempt will not, probably, prove very satisfactory, and the beginner will learn, if he learn nothing more, how difficult it is to perform what, at first sight, appears so easy and simple. In spite of his best efforts, the lights will not resemble the dapples in the natural wood ; but, as practice only makes perfect, so perseverance only will deserve success. If his first effort shall suggest to the beholder anything better than quail-tracks and blotches, he may congratulate himself on his performance.

Supposing the panels to be finished "for better for worse," the moldings will be combed plainly, and the middle rail, with the center, top, and bottom stiles, will come

next in order. These are usually selected for the greatest display of work. The color will be first applied to the middle stiles, leaving the middle, top, and bottom rails to be rubbed in, each in turn, as the work proceeds. The two middle stiles will be finished before putting the work into the middle or broad rail. The color may be rubbed into the top and bottom rails at the same time as on the broad rail. In this order of procedure no care will be necessary in wiping the joints, and the color may lap over on the parts not rubbed in, to be cut off at the joints in the finishing stiles or rails, as the case may be.

The necessity of keeping each piece composing the door distinct, and treating each by itself, will be obvious to the greatest novice in the art of graining.

The work of wiping out with a rag will be continued in the sap or veined portion no longer than is actually necessary, as whatever can be done with the coarse comb will be a clear saving of time. In the sap or veined portion of the work the combing will follow the wiping out, and not precede it, as was the case with the panels. The top and bottom rails will usually be finished plainly ; that is, with coarse combing, but not of necessity straight grain. The outer stiles can be heavier and coarser than other parts, and this will finish the work so far as the oil-coat is concerned.

The oil-graining is now set aside, and the job left to dry, to be ready for the glazing-coat, which should be done in water-color, supposing the intention be to varnish at once. Some grainers glaze with a portion of the same color as was

used for the first coat, but the use of water-color is strongly advised. Supposing this oil-coat to be well dried, a light rubbing over with a worn piece of fine sand-paper is recommended before the glazing. Colors ground in water, and put up in wide-mouthed bottles, are now obtainable in the color-shops, and are more convenient and economical than the same materials prepared in the paint-shop. The proper glazing color for light oak is made with raw sienna, burnt sienna, and Vandyke-brown, in such proportions as shall be found best in practice, and the color must be used thin, and the quantity used must be very small. The operation of glazing is most important, as a good job may be spoiled by unskillful manipulation in this process, as a poor job may be redeemed, in a measure, by skillful handling in the glazing-coat.

Much may be done in this process, in the way of remedying any defect in the ground, supposing it shall be found, in finishing, not to have been just what was required ; that is, a yellower color may be imparted by using more of the raw sienna in the glazing-color—supposing a more yellow tone be desirable—or, a too yellow ground may be concealed by using more of burnt sienna and Vandyke-brown. The color should not be thinned at once, as was the color for the oil-coat, but should be placed on a palette or a piece of board, and thinned by dipping the brush in water as the work proceeds. This is necessary from the fact that in some parts, as with panels, a very thin, light wash of glazing will serve, while on the moldings, and around the knots, and in the “sap” work, a much thicker coat will be necessary.

The brushes required for this part of the operation are a top- or over-grainer, shown on page 127, a badger-blender, on page 125, and a common pocket-comb. The water-color must be rubbed in with a stiff bristle-brush, and softened with the blender, so as not to show any streaks or brush-marks. But one panel should be rubbed in at a time, as the thin coat of water-color dries almost as fast as it can be applied. The top grain, which is almost inappreciable, will be put in with the over-grainer, which must, after being dipped in very thin color, be combed with the pocket-comb, so as to separate the bristles into groups, which shall stand apart from each other, forming, as it were, a series of parallel, small, thin brushes. The over-grainer, in this shape, will be passed lightly from top to bottom of the panels, after which the blender must be used to soften the harsh lines and give indistinctness to the grain. Great care is necessary, in this operation, not to apply too much color, or the effect will be streakiness rather than the almost imperceptible grain required. The glazing or shading must be continued on the rails and stiles, as may be required by the character of the work. These should be darker than the panels, and the molding should be more deeply shaded than the rails and stiles. The glowing lights around the knots are wiped out of the glazing-color, and delicately softened with the blender. This brings the work up to varnishing, which will be treated in a separate chapter, and the utter impossibility of giving anything like a clear conception of this operation of glazing, by means of a verbal teaching, would seem to preclude the necessity of

any further words upon the subject. Enough to say, in conclusion, that it is to graining what light and shade are to the higher branches of the art of painting. It gives depth, and tone, and glow, and transparency; and, more than any part of the process, requires the possession and development of those faculties which distinguish the artist from the mere mechanic.

The object selected for the operation described was chosen for the reason that the greatest amount of work is usually done on doors, and a workman who can make a good job on this will find no difficulty in executing whatever kind of wood-work may come under his hand. In wainscoting, or side-walls, composed of narrow, tongued-and-grooved boards of equal width, the custom is to put in less work, and to show a greater uniformity than is shown in the separate pieces composing a door. Coarse and fine combing, with here and there a strip showing dapples and sap-work, is the usual mode of giving variety to the strips composing the wall or wainscot, as the case may be. The glazing-coat, however, is mostly relied on to give distinctness and variety to the work. Some of the strips will be left without glazing, while others will be glazed more or less dark, as taste and fancy may dictate. As a rule, the boards or strips alternate with quite a degree of regularity, a darker shade between two light ones. This gives a much better effect than to have a group of dark ones followed by a group of lighter ones, or than an occasional dark strip in a group of lighter ones. A good effect is produced on doors and other paneled work by putting in the panels very light

oak, and the rails and stiles very dark red-oak, the moldings being in any case darker than the rails and stiles. The molding, if not too deep and heavy, may be painted with coach-black before varnishing, with a gold stripe in the inner flat portion of the same. This gold stripe makes a very good contrast with the light-oak panel, and sets off the black better than anything else. This work, however, requires a skillful hand, and is not recommended for novices.

A summary of the foregoing instructions may prove useful to some readers who may not have seen a job of graining performed, and we propose to give, in brief, an outline of the processes in the order in which they usually occur.

The first requisite is a hard, well sand-papered surface, with a properly colored ground.

The tools required are a paint-brush, for rubbing in the graining-color ; a set of steel graining-combs ; a painter's duster, or other dry bristle-brush ; and a rag, to wipe out the lights.

Next in order is the graining-color, and the ready-made colors are recommended for all, especially for beginners. It may be well to state here that all graining-colors are compounded of raw and burnt Italian sienna, raw and burnt Turkey umber, Vandyke-brown, and drop-black, in varied proportions according to the requirements of the occasion. It is impossible to give due proportions, for the reason that these materials, found usually in the paint-shops, vary so much in strength, quality, fineness, and consistency.

The tools and materials being provided, the next in

order of proceeding is the thinning of the color. This can be properly learned only by practice. As a rule, unpracticed hands put on too much color. Use boiled oil and turpentine, and no more oil than is necessary to keep the color from setting too quickly. If the needs of the occasion require the color to dry very rapidly, use a small quantity of good brown japan or gold-size.

Rub in the graining-color with a moderately stiff brush. In dappled work comb the surface before taking out the lights. In sap or veined work, comb after wiping out. When a stile crosses a rail, the rail being dark and full of work, the stile at the joint or line of contact should show plain combing, and be of lighter color, to contrast with its darker neighbor. This is a good general rule for all oak graining. The oil-coat should stand overnight to dry. Before glazing, rub the oil-coat lightly with a piece of fine, worn sand-paper. Use water-color for the glazing, for the reason, if for no other, that no time must necessarily elapse before varnishing. Raw and burnt sienna and Vandyke-brown, in varying proportions, make the proper glazing for both light and dark oak. The tools required in glazing are a water-color brush, a badger-blender, a top- or over-grainer, and a rag.

Judgment, taste, skill, and practice are indispensable prerequisites to a good job of grained work.

The before-mentioned horn tool, for taking out the lights in dappled work, is simply a straight piece of horn about an inch wide, and as thick as a nickel five-cent piece. The end, slightly rounded, must be beveled on both sides

to a sharp edge, and kept sharp by rubbing it on a piece of sand-paper, as a carpenter sharpens a tool with a whetstone. The hand not holding the tool must carry a piece of rag, as the horn requires wiping after every application of it to the painted surface. The blade of a horn spatula, common in every apothecary's shop, offers the readiest means for providing one's self with such a tool as is above described. The ground coat must be well dried, on which the horn is used; otherwise it will be cut up by the sharp edge of the tool.

The directions given herein, both as to ground-tints and graining, are not presented dogmatically, but rather suggestively, as worthy of following by those who have no knowledge or idea of anything better; and these words are not for those who are skilled in the art, but for the unlearned, the uninitiated—not to him who is able to be a teacher, but to him who is desirous of receiving instruction. As a fine art, graining becomes subject to the rules which govern art generally, if it be admitted that true art has lines and bounds; and, paradoxical as the utterance may seem, there is no hesitation in declaring that the best efforts or attainments in this line are not those which most closely resemble the natural wood.

CHAPTER XVII.

DARK-OAK GRAINING-COLOR.

THERE is not a word to be said instructively under this heading which has not been fully given in the foregoing chapter. With the exception of the different ground and graining color, every word used in describing the process in light-oak graining has equal significance in this.

The ground for dark oak is made of pure white-lead, golden ochre, and royal red. Deep orange-chrome in place of golden ochre is sometimes used for ground for dark oak, when a very bright tone is desired. The graining-color is composed of the same materials as the graining-color for light oak, viz., burnt sienna, raw sienna, and Vandyke-brown, differing only in proportion.

The reader—he who would become a grainer, or he who would add to his stock of already acquired knowledge—must not suppose, because of his having the names of the materials required to make a graining-color, that he has only to procure a can of each of these at the shops and proceed forthwith to make what is demanded, both in tone and working quality. Unfortunately, the chances are de-

cidedly against him, and he will, in a majority of cases, get what he does not want, rather than what he does want. It is a lamentable fact that the ground colors offered for sale throughout the country are not, as a rule, what they purport to be.

The bulk of the so-called raw sienna is little better, if any, than commonest yellow ochre; the burnt sienna is hardly better than Venetian red, while the Vandyke-brown is composed of what? "Nor gods nor man can tell!" Now, to require a workman to make a good job of graining with such materials is quite as unreasonable as was the requisition on the part of the Egyptians that the captive children of Israel should make bricks without straw.

As a rule, dealers in paints buy ground colors bearing the names of the required articles, without regard to quality; that is, they purchase what they can buy most cheaply and sell most dearly, and it rests with the consumer to demand and receive that which he knows to be good, or at least that which has a good reputation. In view of the fact that the most skillful and experienced painter can not do a job of plain painting well without good materials and tools, all will see the importance of the best materials to the unpracticed hand or the novice.

It has been said before in these pages that hardly two professional grainers will agree as to the exact tone for ground for any one of the fancy or colored woods. In many, perhaps most cases, this fastidiousness comes more from willfulness, stubbornness, or vain conceit, than from reason. A grainer must indeed be weak in resources who can not do

a fair job of graining on any ground, supposing the same to be light enough and not decidedly *off color*. Many of our professed grainers are real artists, and execute with true artistic fervor; while too many, alas! are thoroughly mechanical, and among these latter will be found those who are most captious and fastidious as to tints of ground and color.

There are some who will read this book, no doubt, whose knowledge of color-harmony has not been improved either by study or practice; and all readers may perhaps be benefited by a few words on this most important subject. It is unquestionably essential that every painter should know what plain colors and tints may be used in harmonious contrasts or combinations with the various painted imitations of fancy woods. Green is entirely unobjectionable; indeed, it forms a most pleasing contrast with light oak, satinwood, bird's-eye maple, chestnut, and ash; but is discordant with mahogany, black-walnut, and rosewood. Blue is entirely harmonious with all these latter. Black harmonizes with all the woods, as does white; but white with the lighter-colored ones is feeble and wanting. All the woods harmonize with each other, except black-walnut with mahogany and rosewood. Gold is good with all, but the contrast with the light-colored ones is not so brilliant as with the dark-toned woods. The bright colors in these deaden the usually dull tones of black-walnut, and detract from it thereby; whereas the contrast of the latter-named wood with the light-colored ones improves and brightens all the contrasting tints and shades.

Light and dark oak are best shown by themselves in contrast with each other, being too coarse in the grain to exhibit with good effect in combination with maple and satinwood.

In color-harmony, generally, white and black harmonize with all colors but green. Gold is good with every color, shade, and tint, but especially rich with green, black, purple, carmine, and blue.

CHAPTER XVIII.

BLACK-WALNUT GRAINING.

THIS wood, now so common in every household, so extensively used in doors, wainscoting, and furniture of every description, has become the *mode* within the last ten or fifteen years. Previously it was held in slight estimation, was used only for very common purposes, and no one dreamed that this cheap and common domestic tree would become the successful rival of the aristocratic rosewood and mahogany.

In black-walnut graining no two workmen seem to agree as to what the prevailing tone should be. The wood itself presents so great a variety of tones and shades that, when the mind seems about to accept a certain shade as the best imitation of the natural wood, a sample presents itself which upsets all preconceived notions, and the inquirer finds himself "all at sea again." The general tone of the wood, as seen before being worked, is a blackish brown, and the beholder would hardly suspect the presence of a rich red undertone, almost as bright as the glowing red of mahogany. Yet such is the case, and in almost any large

piece of furniture some parts will show a decidedly reddish ground. This red glows out from underneath the brown surface, and can not successfully be shown in the graining-color. It must therefore be provided for in the groundwork, which should be sufficiently red to represent those pieces of the wood which exhibit the reddest tones of color.

Black-walnut is imitated on every variety of colored ground, from straw-color to drab. We suggest, as the most proper tone for imitating this popular wood, a groundwork made of white-lead, with golden ochre and royal red and black. The reader will bear in mind the fact that there exists in this case no difficulty in covering and concealing with the almost black graining-color the underwork, however bright it may be. So it will be best to err on the side of a too bright ground, rather than one which is too dull to represent the brighter specimens of the natural wood.

There can be no question as to the mode of painting most proper for producing the best results in black-walnut graining. The wood is what is called soft-grained, and does not present the sharp lines and clear grain observable in light and dark oak. Therefore it can be best imitated in distemper-graining; but as this process is more difficult than oil-graining, and requires more skill in successful manipulation, we shall treat it only incidentally, confining our teachings mainly to graining in oil.

Supposing the groundwork to be of the right tint, the next proceeding is to go over the work with a coat of Vandyke-brown and drop-black ground in water. All the colors used in graining may be obtained from the dealer,

ready ground in water, for less cost than would be involved in preparing the same in the paint-shop.

This coat of water-color, while yet fresh, must be broken into grains by stippling with a painter's duster or other dry bristle-brush. For the information of those who are unfamiliar with this word, or the operation which it signifies, we would remark that stippling is simply the pouncing of the whole surface with the ends of the bristles composing a painter's duster or other brush.

When this stippled coat of distemper-color, so called, has become dry, the work will be ready for the application of the oil graining-color. It is taken for granted that the workman will have supplied himself with a can of ready-made graining-color, and that no mixing is required, except to thin with boiled oil and turpentine in such proportions as practice alone will teach properly. It need only be said in this connection that just enough of oil should be used to prevent the color from setting too quickly, when the intention is to wipe out the lights with a rag, after the manner of oak graining, which is not the mode we shall recommend. It will be borne in mind that in black-walnut graining the imitation is always darker than the natural wood, for the reason that wood of this kind used in domestic and other architecture, and also in furniture, is usually finished with some varnish or polish which stains and deepens the tone. The effect of the varnish, too, is to bring out the red undertone, which is not observable in the new, unpolished, or unvarnished surface.

The oil graining-color, thinned to proper consistency

for application to the distemper or water-color, may be rubbed into each panel or other piece successively, and finished before rubbing in any more ; or, if the color be slow, the whole door-side may be rubbed in before putting in the veins. The panels and pieces composing the door must be treated, in one sense, individually, and in another collectively—that is, each must have its individual character, but not without reference to the work as a whole. With whatever of variety, there must be a certain uniformity.

That portion of the surface of the work which has been rubbed in with the graining-color is ready for what we are pleased to call the hand of the artist. The oil graining-color may be left to set a little before proceeding with the work of putting in the veins and figures. There are two modes of doing this : one is to wipe out the lights, as in oak graining ; the other, to put in the darker veins with a sable or camel's-hair pencil. The former mode is not recommended, for the reason that the darker veins cover so small a proportion of the surface, that wiping out the lights is to wipe off nearly all the color which has been applied. As the veins are put in, they should be softened with the badger-blender, the proper manipulation of which comes easy after a little practice. This portion of the work requires not only more time but more skill than any other, and with the glazing and shading is really that part of the operation which demands a cunning hand and a practiced eye.

After applying the coat of oil graining-color, it is common to wipe with a rag some of the color from the work from

top to bottom of rail or panel, as the case may be, to give variety and a more woody appearance to the job in hand. If it were possible to tell just when and where this should be done, the writer's task would be comparatively easy ; but this knowledge will come only through close observation of the natural wood, or the work of some accomplished grainer. Much of the graining, even in the best jobs, will of course be done plainly and quickly. A painter's duster, or other brush, drawn lengthwise of the rail or stile, or diagonally across the same, and softened with the blender, will be all-sufficient to make a good enough imitation for a considerable portion of the work. Care must be taken not to elaborate the job too much, or it will look finical, petty, and inartistic. Too much plainness, on the other hand, will give the work a careless, slovenly, unworkmanlike character. It is important that proper care be taken as to the joints ; each separate piece of wood must be shown by and for itself. The graining on the stiles of a door must not lap over the rails, but go cleanly and sharply along the joint-lines. The oil-coat will be left to dry overnight, or a day or two, as may be convenient, before the glazing-coat, which will be water-color, composed of Vandyke-brown and drop-black. The mode of procedure in the finishing operation will be the same as described under the caption of light-oak graining.

The water-color will be rubbed in one panel or piece at a time, and stippled with a dry brush, and blended with the badger-hair softener, more or less color being applied as the nature of the work may require. It will be observed

that there is a much greater uniformity of tone in black-walnut than in either light or dark oak, this wood being singularly free from knots and gnarled places or spots. The use of the comb may be entirely dispensed with in black-walnut graining. Moldings and carved work must always be glazed, so as to show darker than the surrounding surface. The top- or over-grainer may be used for putting in the veins on straight work, as rails and stiles of doors and wainscoting, with a view to economy of time ; but to make good work with it requires a practiced hand.

A bit of sponge is a useful article in all kinds of water-color graining and glazing.

A summary of the foregoing directions for graining black-walnut shows as follows :

A ground-color, made of pure white-lead, orange chrome-yellow, or golden ochre and royal red and black.

A stippled coat of water-color, composed of Vandyke-brown and drop-black.

Oil graining-color, composed of Vandyke-brown, burnt sienna, burnt umber, and drop-black. Ready-made graining-colors are recommended as best and cheapest.

The oil-color may be applied as soon as the stippled coat of water-color is dry. The veins are put in with a pencil on the fresh oil-coat, and blended to soften and give them indistinctness.

When the oil-coat is dry, it should be lightly rubbed with worn fine sand-paper, and a glazing-coat of water-color, mixed the same as for the first stippled coat, should

be applied. This must also be stippled, and softened with a blender.

Let the ground-color be light enough to show the lightest specimens of wood, trusting to a greater depth of color to represent the darker pieces.

When a large surface is to be grained cheaply, employ a large paint-brush for rubbing in, and an eight-inch kalsomine-brush for stippling, using the flat side of the bristles, and not the ends thereof.

For glazing, water is always better than beer as a thinner, whenever it will hold the color, as beer has a bad effect on the first coat of varnish.

A job of black-walnut graining may be finished in one day by the free use of japan or gold-size in the oil-coat.

If the work is to be finished without varnish, the glazing-coat must be of oil graining-color.

CHAPTER XIX.

ASH GRAINING.

UNTIL within a few years there has been no demand for painted imitations of this very useful and, in some of its presentations, beautiful wood.

It has of late more and more come into use in the interior finish of railroad-cars and carriages, and of houses and domiciles. The latter-named fact has consequently created a demand for the painted imitation of this wood in cases where the use of the natural wood, from whatever cause, was not deemed expedient.

The question as to the economy of natural wood, against painted imitations of the same, will probably remain for a long time unanswered. First cost, with the great majority of house-owners, who have the bills to pay, is of prime importance. A domicile constructed of soft-pine wood may be left for a time unpainted without any great detriment to comfort or to the health of the occupants, and painting will be in order at any time subsequent to occupation, whenever the wishes and disposition of the occupants may be in accord with the saved-up money wherewith to pay the painter's bill.

Graining or grained work is, of all the various styles of painting, the most economical, because such work, properly performed, will last an indefinite period, and stand the washings, and wipings, and house-cleanings to which interior painting must necessarily be exposed, without becoming spoiled or damaged. Plain colors could be as surely and well protected as grained work by coats of varnish; but the varnish would discolor the tints unless they should be quite dark, and plain colors, such as would be suitable for finishing the interior wood-work of a dwelling-house, would not look well, nor be in accordance with good taste, if finished with a varnished surface.

Ash-wood, being cheaper and more easily worked than oak, is frequently used as a substitute for the latter, which, more than any other woody growth, it closely resembles. Indeed, there are many not unaccustomed to familiarity with furniture and other joined work, who can not always distinguish between these two woods.

Ash may be imitated on the same ground-color as that used for light oak, and all the instructions given for light-oak graining may be followed, the same as if they were written especially for this, excepting that the dapples which give such an agreeable diversity to oak-wood are entirely wanting in ash.

The work for ash graining has the same colored ground, undergoes the same preparation, and the same process of wiping out and combing to show the veins and grain.

It would seem that no further directions or instructions

can be given as to the best method of proceeding to obtain a good imitation of this wood.

The painter is advised not to attempt to make his own ash graining-color, if it be possible for him to obtain a can of ready-made color, for the reason that he will experience great difficulty and spend a good deal of labor in making that which he may obtain ready-made to his hand.

The use of this wood is so common, and the American ash varies so little in its grain and tone of color, that the workman is advised to procure a piece of ash with a planed surface, to fill up and varnish the same, and to use it as an example for imitation.

The occurrence of knots in ash is not infrequent, and the knots themselves are commonly very dark in contrast with the surrounding parts. These knots, with their accompanying tints and complication and bright flash-lights, give to the wood all those beautiful diversities which render this common material worthy of imitation.

There is a species of this wood called Hungarian ash, now in common use in the interior finish for passenger-cars. This is applied wholly in the shape of veneers, and exhibits a wonderfully diversified grain, the same being beautifully and intricately curled and tinted. In tone of color, both in groundwork and grain, it does not differ from the common American growth.

CHAPTER XX.

CHESTNUT GRAINING.

THIS chapter will finish our direct instruction for oil-graining, and will necessarily be brief, from the fact that there is little to be said on this that has not been already repeated under light and dark oak, excepting the direction for making the ground and preparing the graining-color. The writer confesses himself at a loss to understand why any person should desire or require the imitation of this coarse and sickly-yellow-looking wood ; but “every one to his taste” is perhaps a good motto, and we will not quarrel with the man who would even imitate spruce or hemlock with grained work.

The ground for chestnut is decidedly more yellow than any which has been shown or described, and it would seem to require a glazing of yellow to make a really close imitation of the natural wood. White-lead with yellow ochre and a little orange-chrome will give the best tint for groundwork, and burnt umber with a very little Vandyke-brown and burnt sienna makes the best graining-color. Ready-made chestnut graining-color can be pro-

cured at the shops, and its use is advised in preference to the making up of the color by the painter.

This wood is generally of very coarse grain, being of more rapid growth than any of the other so-called hard woods, while it presents a greater degree of sameness and want of variety. It should be imitated by wiping out, after the manner of oak-graining, and the use of coarse combs. The best study is a piece of chestnut board, planed and filled up and polished. We have never seen a grainer who took any particular pride in his ability to make a good imitation of this wood, and we can not therefore recommend, as copy for the beginner, specimens executed by any first-class workman.

In view of the fact that the cost of imitating this cheap and common wood is as great as is the cost of painting in imitation of oak, black-walnut, or other woods which are worth imitating, the query still remains unanswered, Why do people require painted imitations of this very ordinary and plain-looking wood ?

CHAPTER XXI.

NEW SYSTEM OF GRAINING ON UNPAINTED PINE-WOOD SURFACES.

THE first work of this kind which ever came under the writer's notice was performed under his own supervision and direction, and he therefore reasonably concludes that the same will be a novelty to the trade. The peculiarity of this new manner of graining is the application of the *graining-colors* directly to the unpainted pine-wood surface. The tint of new white pine gives as good a ground-color for light-oak graining as can be desired, at the same time not being objectionable, under the proposed mode of treatment, for dark oak and black-walnut.

The operation consists simply in giving to the work one coat of glue-size, and applying the graining-color in the same manner as heretofore described under the title of "Light-Oak Graining."

In this method (referring to black-walnut) the stippled coat of distemper-color must be dispensed with, and the oil-color applied directly to the ground.

To prepare the glue-size, take a handful, more or less, as may be required, of *white* glue, and throw the same into

a clean pail or other vessel ; cover with cold water, and let stand overnight. Next morning pour on boiling water, apply a moderate heat for a few minutes, and the whole will become thoroughly dissolved and homogeneous. Let this be of strength sufficient to bear out the graining-color long enough to permit the combing and taking out of the lights, and also strong enough to cover the knots and resinous places, so that the varnish-coat will not remove the graining-color therefrom. A little practice will make perfect in this respect.

The graining-color may have a greater proportion of oil than is recommended for graining on painted surfaces, as the wood will be, notwithstanding the coating of glue, more or less absorbent. It is advised to rub in and grain one panel or other piece at a time ; at least, until the operator shall have learned by experience how long the color will "bear out" without setting to that degree that it will not comb and wipe. As much graining-color, thinned with boiled oil and turpentine, should be used as possible, consistent with the proper tone of color for the light-oak parts, for the reason that the heavier the graining-coat, the better body will there be for receiving the varnish-coat.

For black-walnut the first application of graining-color should be stippled, as is directed for the distemper-color in ordinary black-walnut graining ; and the veins put on the stippled coat when fresh, the blender being used to soften, as before described.

The beginner will find it not difficult to trace the veins,

which will show plainly through the color, and the practice will be good, for the reason that tracing the *natural* veins will familiarize him with the shapes and directions which the grain takes on in the growth of the timber. This applies not to black-walnut, the grain of which is not unlike that of white pine.

The first coat being well dried, should be rubbed lightly with fine, worn sand-paper, and the glazing or shading coat may be either oil-color, as was the first coat, or distemper, as in the ordinary way. Oil is advised, for the reason before given—to make a better body for the varnish-coat. It will be well to leave the work for a day or two before applying the varnish, which should be carriage, and not quick, hard-drying, furniture-varnish. Two coats of varnish are advised, as the extra wearing quality of the job will more than repay the cost of the second coat.

It must not be supposed that work done in this way will present the finished appearance of grained work done on three or four coats of paint; but it enables the unskilled grainer to make a clean job at the least expenditure of time and money, and one which will prove vastly more durable than the best job done in the ordinary way, because the color, being ingrained on the wood, will not chip off and show the lighter groundwork underneath the darker graining-color. The system is not offered as the equivalent of, or as a substitute for, the best grained work as ordinarily performed; but as a cheap and ready mode of producing a smooth and durable surface in houses where white and light tints are not specially required. The

writer exhibits specimens of this style which pass among experts as good jobs of grained work, and many are slow to believe that it is done on an unpainted surface of common white pine. In any event, a trial will cost nothing, as, in case the result shall not prove satisfactory, the color and varnish already applied will make a good foundation to paint upon.

CHAPTER XXII.

DISTEMPER-GRAINING.

THE term “distemper-graining” is imperfectly understood by most people who use it, and there seems to be a general disposition to look upon it as largely, if not wholly, insignificant. Its proper definition is, a method of painting wherein some vehicle other than water or oil is used for thinning the pigments. Its application, however, is to all kinds of graining—and to that work only—where non-water-proof thinning, such as beer, alcohol, glue-size, etc., is employed in place of oil, varnish, or substances of like nature.

Formerly, all imitations of wood and marble were done in distemper, oil-graining being of comparatively recent date. The advantage of distemper-graining is, that no time (so to speak) need necessarily elapse between the putting in of the work and the varnish-coat.

For certain kinds of the hard, close-grained woods, such as maple, mahogany, satinwood, and rosewood, the best effects are produced by the use of water-colors, rather than oil graining-colors; while for the open, coarse-grained

woods, as oak, ash, and chestnut, the oil-colors are decidedly preferable. There are several modes of procedure in distemper-graining, all of which will be treated more or less fully in succeeding chapters.

CHAPTER XXIII.

BIRD'S-EYE MAPLE.

THE wood of this very respectable native tree is, with its close, fine texture, its delicate, soft-toned ground and shadings, and penciled, sinuous grain, altogether the most beautiful of what are called the light-colored woods. Painted imitations of it should always be executed in distemper or water-colors on a very smooth ground of almost white, but just turned toward a buff with the addition of the slightest quantity of Italian raw sienna. Some grainers use a white ground, but it is not recommended, because it gives a sharp, harsh character, which does not belong to the natural wood when finished and polished.

Raw Italian sienna, with the addition of burnt sienna and Vandyke-brown, gives the proper graining-color for maple. The raw sienna, of course, forms the bulk of the material. The ground should be rubbed very smooth with fine sand-paper. The amount of graining-color required is very small, and the work must be rubbed in one panel or piece at a time. There are several modes of taking out the lights. The one recommended is by means of the tool made

expressly for this work, called a *cutter*, and shown on page 128. The tool is drawn over the work longitudinally of the panel or rail or stile, as the case may be, and the sides of the cutter are alternately raised and lowered in its passage, in order to wipe out the color as shown in the natural wood. The work is then blended with the badger crosswise, from left to right, but not in the direction of the tool—that is, the blending or softening must be done transversely to the direction or path of the cutter. This brings the work to that point where the use of the “piped maple over- (or top-) grainer,” as shown on page 126, comes into use. The pipes, it will be seen, keep the pencil-points apart or separate, and there is nothing to be done but to make the proper color for the over-grain, and to draw the over-grainer with an undulating, sinuous motion from top to bottom of the panel. When the writer was a boy, the custom was, in maple grain-ing, to take out the lights by rolling a wet sponge from top to bottom, and to put in the bird’s-eyes by dabbing the wet surface of the work with the four fingers held more or less loosely or in contact. This, to say the least of it, was an expeditious mode of procedure, but we are inclined to the opinion that, like almost everything else obtained at little cost, it was little worth. The putting in of the bird’s-eyes to an imitation of maple is a somewhat delicate operation, and to produce good results requires a cunning hand. The best tool for this purpose that has ever come under the observation of the writer is a piece of woollen cloth, say broad-cloth, so folded as to present, on the end of a somewhat sharp angle, a form similar to the eyes seen in the wood.

The operation of folding the cloth is extremely simple to the sight, but not so easily made intelligible by a verbal description. With not a few misgivings as to the success of the experiment, the writer will attempt to describe the operation.

Take a piece of woolen cloth, about as large as the hand ; lay on the table and fold in the middle lengthwise ; bring the two edges together toward the body, leaving the fold away from the body ; then, at a distance of about two inches from the right-hand end, fold the cloth over upon itself so as to bring that portion of the folded edge which is held in the fingers at right angles to the part held under the left hand, forming at the right hand an imperfect triangle ; this will be continued until the cloth shall take on the shape of a flattened horn, so called, such as fancy candies are wrapped in sometimes. The sharp end, when applied to a small quantity of color spread upon a board or other flat surface, will retain enough to form a minute, incomplete circle or eye, which, as well as or better than any other readily available means, will imitate the eyes or dots in the natural wood. These eyes are not put in without regard to arrangement. Each eye has its proper place, which place will be readily found by consulting a piece of the natural wood. Remember, *the blender is not used after* the eyes are put in. What seems to be the shadow of the dark spot is the color which the cutter did not remove, and which was softened crosswise, from left to right.

Bird's-eye maple is exhibited mostly in shops and offices where showiness is required, and in panels only, the rails

and stiles being either warm-toned black-walnut, or, better, rosewood. The moldings may be cut in with scarlet vermillion (true) before the finishing coat of varnish.

The tree which affords this wood is the well-known sugar-maple (*Acer saccharinum*), so common in the more Northern States.

The time will probably come when this tree will possess a greater value for cabinet and joiner work than for the crop of sugar which it yields. Its use at present is confined mostly to panels for cabinet furniture and linings for drawers in the shape of veneers.

CHAPTER XXIV.

MAHOGANY GRAINING.*

THE almost total disuse of this beautiful and serviceable wood for cabinet-work and internal domestic architecture generally, and its substitution by black-walnut, is and must remain one of those freaks or caprices of fashion which no man can account for.

Painted imitations also have gone out with the original, and a professional grainer might not in the course of years be called on to do a piece of grained work in imitation of mahogany; whereas, a few years ago, to imitate mahogany successfully was considered the highest reach of the grainer's art.

For painted imitations of this wood a bright ground is required, which may be best produced with extra-deep orange chrome-yellow and royal red. The graining-color is made with burnt Italian sienna and a little Vandyke-brown. The grain is put in with various means and tools,

* This chapter was written some years ago, when this beautiful wood was almost forgotten as a material out of which to construct household furniture. The mutations of fashion have again brought it to the front, and from this time forth mahogany will be "the mode," and black-walnut must take a back seat. Consequently, what we have said about mahogany graining has a double value, for the reason that imitations of the favorite wood will again be in demand.

according to the kind or variety of the wood to be imitated. In *doors* and other paneled work what is known as crotch-work is generally displayed. In this the lights are taken out with the cutter, as shown on page 128, and for this purpose the use of this tool is advised as the best of all the various methods which ingenious workmen have devised for this purpose. We could tell of a dozen others, but, as the result would be to mislead rather than to elucidate, we refrain. The top- or over-grainer, such as used in oak graining, is a most important tool in mahogany graining, and the proper use of it readily comes with practice. It must not, however, as in its application to oak, be broken or separated in distinct, comb-like teeth, but must be kept as much as possible in its natural or dry state. The fine lines which are put in with the top-grainer do not, as in oak panels, proceed in straight or nearly straight lines from top to bottom, but commence at the bottom on the left-hand side of the crotch, and are carried, with a slightly waving motion, at a pretty sharp angle, to the center of the crotch, and brought down on the right-hand side and terminated at the bottom or sides of the panel. The first lines will commence, of course, at the bottom and terminate there; but as the graining is continued up the panel, the grain will necessarily commence at the side and terminate on the opposite side at the same height or level.

Some grainers use vermilion or orange mineral for making ground for mahogany; but our opinion is, that the colors recommended are sufficiently bright, and that the brighter-colored pigments are not necessary or advisable.

The rails and stiles in doors and paneled work may be grained with the blender by drawing it over the fresh graining-color, either continuously or by arresting its progress every three or four inches, bringing it to a full stop, and then proceeding again. In this, as in all kinds of painted imitations of natural woods, the badger-blender plays a most important part. Graining can not be done without it, any more than it can be done without a paint-brush or colors. It is the principal and most valuable means to produce effects which are almost or quite unattainable without it.

Supposing the graining—that is, the first application of distemper-color—to be finished and dry, the varnish-coat is next in order. This may be a very thin coat, just enough to hold the distemper, and the varnish should be what coach-painters call *quick rubbing*. When this varnish-coat is sufficiently dry—which should be in one day—the work is ready for glazing, which will be done with the same color as was used for putting in the grain in the first coat. Rub in the work, panel by panel, with thin glazing-color and stipple with the blender, softening the grain, as may seem necessary.

The glazing-coat in mahogany graining seems more indispensable than in imitating the other woods, for the reason that mahogany has more depth and transparency.

The finishing varnish-coat should be what the trade denominates as “hard-drying coach-body,” and should be flowed on with a thick badger-hair varnish-brush, leaving as much varnish on the surface as will remain there without running.

CHAPTER XXV.

ROSEWOOD GRAINING.

THIS costly and beautiful wood yet holds its place in the fashionable world, and the arbitrary dictates of that capricious yet almost unquestioned power command that certain articles of furniture, for certain times and places, shall be shaped in rosewood.

Painted imitations of rosewood are not, as a rule, satisfactory or desirable, mainly from the fact that such articles as would be painted in imitation of it are generally not fabricated out of the natural wood. Rosewood doors are not uncommon, it is true; but their surroundings are usually such as to put grained work entirely out of the question.

The proper ground for rosewood is crimson vermilion; not the so-called American vermilion, but the true quick-silver product. The surface should be very smooth, and previous to putting in the grain there should be a glazing of English crimson-lake applied to the ground. This brings the surface to a proper condition for receiving the grain. This will be done with black, but not lampblack. The

gray tone of the common carbon, which comes from the destructive distillation of fatty substances, will not give what is required for the work in question.

The black required for this work is to common lamp-black what the latter-named article is to lead-color.

There is a black used by coach-makers which comes from the carbonizing of pure ivory. This is the only black which has no rival but that darkness which has never known a ray of light. It may be obtained by the grainer, not at the ordinary places where ground paints are sold, but at some dealer's who trades in coach-makers' goods. It will be found ground in quick-drying vehicles, and for the requirements of the grainer must be reduced with raw linseed-oil. This black is the proper material for putting in the grain of an imitation of rosewood. This penciling-coat will be blended as fast as put in with the badger, and, when thoroughly dry, the whole surface will be glazed with a very thin coat of the same black as was used for the veined work. The glazing-coat of black—the black being a body-color—will, of course, be very thin, and the glazing process will be precisely the same as recommended for black-walnut and oak.

Rose-pink is sometimes used in place of lake for the first glazing-coat, but, as this is one of the most fugitive of all colors, its use is not advised, especially for out-door work.

Rosewood imitations are not common, the wood itself being now mostly used for such articles of furniture as are not suitable for imitating with painted work.

CHAPTER XXVI.

SATINWOOD.

THIS is an East-Indian wood of fine grain, and takes on a high polish.

It is displayed mostly in panel-work, and is imitated on a ground of the same tint as that used for bird's-eye maple. The graining-color is the same also as that used in graining the last-named wood, viz., raw Italian sienna with a very small quantity of burnt sienna and Vandyke-brown. The difference in the painted imitations of these woods is simply in the manner of putting in the grain.

The graining is done wholly in distemper, and the lights are taken out with the cutter, as shown on page 128, and the directions as to putting in the top grain, given in the chapter on "Mahogany Graining," are entirely applicable to the work in question.

There is very little demand for satinwood in this country, either in the natural wood or in the painted imitations of the same.

While it is important to cultivate a bold, free hand in graining, it must not be forgotten that a close imita-

tion of natural wood is the result of careful manipulation, a practiced eye, and good taste. No man can perform a good job, in imitating colored and fancy woods, with a whitewash-brush dipped in color, and get over a half-acre of surface in eight hours. A grained door may be a "*thing of beauty*," as certainly as is the finest work of art which adorns the walls of a picture-gallery. The itinerant picture-vender gladly accepts a few dollars for his pair of thirty-by-forty-inch elegant landscapes, in broad Dutch gilt frames. This sum, multiplied by hundreds, is freely paid for the work of some famous artist, the whole surface of which might almost be covered with a man's two hands. A door-side may be grained for a quarter of a dollar, or twenty-five dollars may be expended, in labor alone, on the same surface. In either case the purchaser is supposed to receive no more than an equivalent for his money. In graining, the most skillful workman can perform, easily and rapidly, the cheapest and plainest kind of work required, and it is a matter of necessity that the professional grainer shall be able to adapt his hand to any style of work which may be required.

CHAPTER XXVII.

BLACK-WALNUT IN DISTEMPER.

THIS mode of graining black-walnut is recommended when a large surface is to be painted quickly and cheaply, and with little regard to the closeness of imitation. It is accomplished in various ways and by various means, some of which—those deemed most useful—will be hereafter described.

First, the ground, similar in tone and character to that used in oil-graining, Chapter XVIII, will be stippled on a coat of water-color, made of burnt sienna and Vandyke-brown ; but the coat and color both must be lighter than that recommended in oil-graining. Upon this stippled coat, when dry, may be put in the veins and lines with a sable pencil or with the top-grainer, as described in oil black-walnut graining. This, of course, requires no time before the varnish-coat, which must be, supposing the intention be to glaze over the varnish, quite thin. When dry, the glazing coat of water-color must be applied in precisely the same manner as shown on page 152, under the head of “Black-Walnut Graining in Oil.”

It is common, in work which does not present any extended surfaces, such as panels—or rail-work, which consists in moldings and narrow flat pieces, as door and window frames, and cornices—to give first a stippled coat of oil-color, and when dry to put on over this a coat of distemper-color and grain with the blender, drawing the same more or less in right lines lengthwise of the work, and softening, as may suit the taste or fancy. This mode is recommended when the surfaces do not afford any chance for a display of artistic labor or skill.

When a large, extended surface of *new* wood is to be painted in imitation of black-walnut, and the result is to be accomplished with the least expenditure of time and material, we recommend the following course of procedure : First give the work a coat of glue-size, having a small quantity of whiting mixed with it ; on this, when dry, a coat of ground-color made with pure white-lead, colored with golden ochre and a little ivory-black, to produce a warm drab ; thin almost entirely with boiled oil, and, when thoroughly dry, apply with a largest-size paint-brush, or an eight-inch kalsomine-brush, a coat of distemper graining-color, mixed as follows : Vandyke-brown and burnt umber ground in water, added to an equal quantity of smooth flour-paste. Thin this with water to a proper consistency, and apply as before said. For the graining, use a handled duster, such as is common for removing the dust from a painted floor by means of a dust-pan. Put the color on a large surface at a time, as it will not dry rapidly, and go over it straight or diagonally with the bristles composing the duster, as

stipple with the same. The varnish-coat over this needs be heavy, and of elastic material, to insure durability. This style of painting results in a clean, respectable-looking job, durable if properly done, and quite as cheap as ordinary two-coat work of plain painting.

CHAPTER XXVIII.

LIGHT-OAK GRAINING IN DISTEMPER.

ORDINARILY there are no conditions or requirements where the painter or grainer is called upon to depart from the now almost universally adopted custom of graining oak in oil-colors ; but there may be occasions where a job of oak graining must be done in distemper ; consequently, every grainer should acquire a knowledge of the process. It is recommended only on the score of economy and saving of time in the operation.

A description of the process, as now in actual operation in one of the large buildings used by the writer as a manufactory, will, perhaps, best elucidate to the average comprehension the mode of proceeding to accomplish the best results with the least expenditure of means.

First in order, the new wood receives a coat of glue-size mixed with common whiting. This is followed by the coat of ground-color—a light buff made of *pure* lead and golden ochre, thinned with clear, boiled oil. This oil-coat, which bears out about as much as an ordinary second coat, is allowed to stand two days, when a rubbing of sand-

paper brings it into condition for the distemper graining-color. For this, take of raw sienna, burnt sienna, and Vandyke-brown ground in water, whatever may be required to do the work; mix to suit the taste, as to tone of color, and add to the mixture an equal quantity of smooth flour-paste; thin with water to a proper consistency for application, apply with a largest-size paint-brush, and comb as in oil-graining. To give variety, some of the work will be combed, and some portion will be left as stippled by the whitewash-brush. In case it may be deemed desirable to give a still greater variety to the work, a glazing-coat of oil graining-color may be given to every other board forming a wall, or bulkhead, or ceiling, and to a rail or stile of a door. When dry, this work should receive a heavy flowing coat of elastic varnish. This style of painting costs but little, if any, more than ordinary plain painting, while it is much more desirable and pleasing to the eye—that is, the general appearance is altogether preferable to plain colors.

CHAPTER XXIX.

VARNISHING.

THE shabbiest economy ever practiced in painting is the use of cheap varnish in finishing any job where a coat of varnish is required.

Closing the seams of a costly garment with unsound thread, or covering an expensive house with a paper roof, would hardly evince less discretion in the way of true economy.

Work that is worth varnishing at all, is worth a good coat of that article. It will look better, wash better, and last longer, whether it be inside or outside work. A coat of cheap varnish—or a dear varnish, if it be not suited to this particular work—may, in a short time, spoil the best possible job of graining, and leave the surface in such a condition that all the labor expended will be worse than thrown away. *Quick-drying, hard varnish, such as is used on furniture, is not suited to varnishing painted surfaces, especially if the work be exposed to the weather.*

It seems almost beyond belief that a householder should secure, at whatever cost of trouble and money, the

services of a first-rate artist to do a particular job of grain-ing, and evince no anxiety as to the character of the var-nish which is put upon the painted surface to protect and preserve it. The difference in cost between the best varnish and the worst, for a job of grained work, is but a trifle. The owner would pay not less than three dollars a gallon for the poorest varnish—that most unfit for the purpose—while the best ought not to cost over six dollars a gallon. The difference in first cost between the best and the worst varnish for coating both sides of a large door, would not be more than thirty or forty cents, while the one will wear ten times as long as the other, and give a much better finish. Many house-painters are at fault in this matter, and practice a left-handed economy in the purchase of varnish.

What would be thought of a carriage-painter who would expend fifty days' labor, and the requisite material, in painting a coach, and finish the same with a coat of doubtful varnish, on the pretense of economy?

It must be remembered that the durability of a job of grained work depends wholly on the varnishing. There is no good reason why grained doors should not last without repainting as long as an oil-painting or other work of art, and they may be made as beautiful and attractive as the pictures which adorn the walls. It is quite within the power of a good workman to so finish a grained door that it shall remain in perfect preservation for twenty years or more. To effect this, requires, of course, the best talent, knowledge, skill, and a practiced hand ; but it is within

reach of every good workman. No good job of grained work, or any other work, in fact, should be looked upon as finished after one coat of varnish. Two coats, at least, should be put on, the first being what is known in coach-painting as "quick leveling or rubbing varnish," and the last, or finishing coat, should be hard-drying, coach-body varnish. The first coat should, after standing long enough to become sufficiently hard, be rubbed with powdered pumice-stone, and the finishing coat should be flowed on with a flat, thick, badger or fitch flowing-brush. As much varnish should be applied as will remain on the work without running. This operation requires skill and practice, with an excellent judgment. No novice should attempt it.

It will be remembered that we are not now treating the question of common grained work, done under the whip and spur of insufficient compensation, but of the best results that are possible with imitations of colored or fancy woods.

Nothing is spared in coach-painting which can or may in any degree conduce to the durability of the work, not incompatible with beauty of finish; and the coach-painter is supposed to have reached the maximum of these two most desirable qualities in combination. So, his example and processes are worthy of imitation, so far as they may be applicable to the work of house-painting. Through a partial adoption of the modes and processes common in coach-painting, the painted surfaces inside our domiciles may be rendered as much more durable than they now are, as coach-work is more beautiful than house-painting. The

assertion may seem startling to the average house-painter's intelligence, but it is a fact, nevertheless, that not one house-painter in a hundred has any knowledge of the proper use and application of varnish.

Varnish should not and must not be rubbed out under the brush, as paint is rubbed out. The two processes are entirely different. In varnishing, the object is to put as much on the work as will stay there. The more varnish there is on the surface, supposing it to be smooth and free from *runs*, the better. The object should be, not how little can the surface be coated with ; but, how much can be put upon it and made to stay there.

House-painters should learn the art of varnishing from coach-painters.

In concluding this chapter, the writer would say, use for good work the best varnish you can get, and as much of it as will remain on the work without running.

CHAPTER XXX.

GENERAL REMARKS.

THERE is much that might be said in a general way on the subject of graining which can not find room in a work of this scope and extent. The aim has been to describe the processes with as much detail and particularity as, in the opinion of the writer, would serve to elucidate the subject, and not befog the learner with a confusing multiplicity of directions. The difficulty of teaching any art or science, however simple, without the use of the technical vocabulary belonging thereto, can not be appreciated by one who has not made the attempt. To teach, by means of written words, a process where both teacher and learner are familiar with the technical terms naturally and properly belonging to such process, is comparatively easy; but to make clear to the comprehension of the novice, simply through such medium, a process which depends for its successful execution almost entirely upon the eye, and at the same time so to phrase it as not to make it seem childish to the initiated, is a task which one comprehending these difficulties would be slow to undertake.

With an apology for the repetition, we would again call attention to the fact that the object has been so to present this matter that one, unacquainted even with the simple names of the tools and materials usually employed, would be enabled to start from the right point and proceed in the proper direction. The measure of success which will wait upon the effort can be known only to those who seek instruction in these pages.

The reader will hardly come to the conclusion that all grained work, or even a majority of it, is wrought out through all the various processes heretofore described.

A very large proportion of what is called graining is finished with one coat of color to the groundwork and one coat of varnish. Indeed, two varnish-coats are the exception rather than the rule. Much of the black-walnut oil-graining is done without the stippled coat of distemper-color and varnished without glazing; but one must not expect to obtain the best results through so simple a process. What is worth having is worth working for; and this will be found true in graining, as in any of the higher branches of the art of painting.

The interior wood-work in mills, factories, and places of like nature, is commonly painted in imitation of some of the lighter hard woods, not so much on the score of appearance as for cleanliness and economy. A varnished surface is much more easily kept clean than a surface of ordinary paint; but varnished *plain colors* do not look well. Under such circumstances, no attempt is made at putting in fine work, the object being to turn off the job as quick-

ly as possible, with a view to neatness and general uniformity.

City grainers—those who call themselves “grainers to the trade”—do not usually, in large jobs, “rub in” the work themselves, but employ one or more boys, who soon become expert in the preliminary process of rubbing in, combing, etc., and who are, from the nature of their occupation, in the very best possible school for acquiring a thorough knowledge of the art.

The importance of a smooth, hard surface to grain upon can not be over-estimated. The best workman in the world can not do good work on a rough, uneven surface, for the reason that the rough places will retain an undue proportion of color, and will not part with it when the attempt is made to wipe out the lights. A well sand-papered surface and finely ground colors are indispensable to good, clean work.

There are some otherwise very good grainers, who have a slovenly habit of not cleaning up the ends and corners. They remind us of men who wear good clothes, but who neglect to brush their hats and black their shoes. Care should be taken to carry the work closely and cleanly down in door-frames and base-boards to the contact line with their resting-places ; as also to cut closely and wipe cleanly along the joints and lines in paneled work. New pine wood-work, which is to be finished in imitation of any of the hard woods, should always be first coated with a color darker than the intended finish, and the first coat should be well sand-papered. The succeeding coats should be as

dark as possible, with a view, of course, to the proper ground-tint for whatever kind of wood it is proposed to imitate. By such a course of procedure, the liability of the finished surface to accidental injury is very much lessened. As the varnish becomes in time brittle, it will, under the accidental blows which it is in the nature of things subjected to, be liable to chip off, and, bringing the graining-color and ground-color with it, reveal the underneath coats. If the color underneath be dark, the general appearance of the work is little defaced, compared with what it would be supposing the priming-coats were white.

The writer has been at a loss to comprehend why men, as a rule, ordinarily practice a niggardly economy in respect to the painting of their houses, while exhibiting a profuse liberality in most other house decorations and embellishments, such as carpets, hangings, furniture, etc.

An owner having decided upon the repainting of his domicile, seems naturally impressed with the idea that the proper thing to do is to call upon all the "trade" far and near, with the request that they come over and view his premises preparatory to furnishing estimates as to how cheaply the work may be done, it being understood that the painter who makes the lowest figures will "get the job." Suppose the house, after repainting, shall require new furniture, carpets, hangings, etc., would any but a lunatic think, under the circumstances, of going to all the upholsterers in New York to obtain estimates of cost, with a view of letting out the work to the concern which would promise to do it for the least sum of money? There is as

much latitude, in the way of quality and kind, in house-painting—graining particularly—as in furniture and upholstery. A grainer may paint a side of a door with an expenditure of ten cents' worth of labor, or he may bestow ten dollars' worth of labor on the same surface ; and he may finish it with varnish that costs him one dollar a gallon, or with varnish which costs six dollars per gallon. In view of these facts, it seems a little unreasonable that a proprietor, having chosen the cheapest thing offered, should find fault because the grained-work is spoiled by the cracking of the varnish, and that the blinds fade almost before the painter turns his back on his completed job.

No person, even in having his house painted, should expect to receive for his money more than its worth ; and *cheap things* are, as a rule, the dearest in the end. That this is especially true of paints and painting, the writer knows from the closest observation and an every-day experience of nearly forty years.

The reader is earnestly requested not to lose sight of the important fact that these words are directed, not to the experienced and practiced workman, but to the learner, the beginner ; not to him who can teach, but to him who is desirous of receiving instruction ; and the writer's task has not been a thankful one, because of the fact of how little can be taught by printed instructions in an operation which depends for its successful execution almost entirely upon the perceptive faculties. True, the hand must be educated, and the intellectual faculties must possess a knowledge of the requisite means and materials ; but the perceptive fac-

ulties alone must be consulted as to the success or failure of the work. The eye only can tell whether or not the work is a creditable imitation of the wood which the workman has attempted to copy. Once more we would impress upon the mind of the learner the importance and even necessity of attempting this work only with good and proper materials. As before said, the first great difficulty in the way of the painter who would become a grainer has been obviated by means of ready-made graining-colors. These are obtainable now almost everywhere, and when not at hand, or in the immediate neighborhood, may be ordered from the manufacturer at the additional cost only of express-charges. The cost of material for graining is but a trifle, as a pound of the best and finest color in market may be purchased at retail for about twenty-five cents, and this quantity would be sufficient to cover from thirty to forty doors. It will be safe to assume that the graining-color for one side of a door will cost not more than a cent. The best color will prove the cheapest, not only because of the greater surface it will spread over, but because the tone of color will best match the wood which it is intended to imitate. Cheap graining-colors, like all cheap adulterated paints, are simply worthless.

The tint of the groundwork is important, but relatively so from the fact that the work may be made lighter or darker by the application of less or more of the graining-color. Nevertheless, it is better, and will cost less in time and trouble, to have the ground right to start with; and we have given the proper materials for making the best

average ground for the various woods. Referring again to the groundwork, let us say that the surface should not be flat, but should present what is known among painters as an egg-shell gloss—that is, just so much oil should be used as will give this gloss, and no more. If more than the necessary quantity of oil be used, the paint will not rub smoothly, and a smooth, hard, even surface is indispensable with a good job of graining, particularly if the lights be taken out with the horn tool heretofore described. Every person who has studiously observed natural woods need not be told that no two widths in a wainscoting of narrow oak boards are precisely alike. They differ not only in grain and figure, but in tone of color, notwithstanding the general uniformity. Some of the boards will show a tone of color in which yellow is decidedly prominent. Other widths will show a brown, as of umber, in the plain portion. The grain also presents a variety of colors. Now, as all these variations are to be shown in the painted imitations upon a uniform ground, it follows that the tone of this ground must be yellow enough to display the yellowest samples which the natural wood presents. The browner tones can be readily produced by the application of a thicker coat of the graining-color, whereby the yellow groundwork may be concealed. No two adjoining boards in a wainscot should be just alike, both in grain and shade, while there should be no violent contrasts. Of the two evils, the least is a dead level of uniformity. The first is only monotonous and unattractive, while the other is painfully suggestive of a failure to perform a task which the skill of the workman was not equal

to. Grained doors, particularly of light oak, should present corresponding panels similarly grained, as if sawed from the same log, supposing them to be natural wood. The work on a panel should be put in with reference to its corresponding companion, and not with its upper or lower one, as the case may be ; that is, the two panels, side by side, should be grained with special reference to each other, and should be very similar in both color and grain. There must also be a general likeness in all the panels and the same character of work, and the same tone of color should be presented on all. The rails and stiles of the door will give sufficient opportunity for a display of the various kinds of grain and tones of color. As a rule, when the panels of a door are grained moderately plain, say with straight combing and in dapples, a greater show of work is made on the rails and stiles, the middle rail and stiles generally being selected for the most elaborate figuring, the top and bottom rails being generally plain and lighter than the outer stiles, which are usually heavy and similar in appearance. Inconsiderate persons may rashly condemn this methodical arrangement as unnatural ; but every grainer knows how indispensable it is to insure a workmanlike job. With the greatest variety there must be a certain uniformity. No first-class joiner or cabinet-maker would throw together the different pieces which go to make up a door or a piece of cabinet-work, without regard to selection. Such carelessness would result in violent contrasts and disagreeable incongruities. The advantage which the imitator has over the worker in natural woods is this : while the worker in

the real is restricted to such varieties as his stock presents, the grainer may give a "counterfeit presentment" of such selections as best comport and harmonize with the surroundings; and, moreover, a piece of grained wood in the highest style of the art is more beautiful, and frequently more costly, than the same work would be if made of the natural wood.

The aim of the writer, in giving suggestions as to the best mode of producing the proper tints and tones for groundwork for the various woods, has been to simplify the thing as much as possible; to make plain, not to darken and confuse—the object being to save the workman all unnecessary trouble and expense. The best and cheapest and most convenient simple material for making grounds for light oak, maple, ash, and chestnut, is pure raw Italian sienna, tinted with pure white-lead; not the so-called sienna which is sold by most paint-dealers under that name, but the genuine article, which can be and should be obtained, even at some cost and trouble, the said color being one of the most useful and indispensable articles in the paint-shop. For maple-ground, of course, the smallest quantity is required, it being necessary only to change the white to the faintest suggestion of straw-color. For ash, the ground should be but little darker. For light oak more of the sienna will be required, while for chestnut a decidedly yellowish tone is wanted. Care should be taken not to make the grounds too dark—rather in the other extreme, for the reason that there is a remedy for a too light ground, in the application of a greater quantity of

graining-color, as also in the glazing-coat ; while a ground too dark can not be made lighter. For dark oak, burnt Italian sienna with white will produce a far better ground than any other *single* color. The same caution must be observed, however, in obtaining this color, as was recommended in the case of the raw Italian sienna. The domestic so-called siennas will not prove substitutes for the genuine Italian pigments.

The ground for black-walnut may be the same as for light oak, with the addition of a little burnt sienna and black. No two professed grainers, perhaps, will agree as to the exact tint of color for groundwork, each one having some predilection for a particular tone. These instructions being offered, not to the expert, but to the uninitiated, we do not propose to run counter to any man's prejudices, our object being, as aforesaid, to simplify the matter to the last possible degree.

And now, having written all that seems important to the learner, and everything which in our view can tend to make plain to the novice the art of imitating woods with colored pigments, with an apology for any shortcomings, and a hope that no one will fail to find something instructive in these pages, we bid adieu to this subject, and turn to fresh fields.

CHAPTER XXXI.

HOW TO PAINT A CARRIAGE.

THERE are many ways of proceeding to the same objective point, and doctors even will disagree as to the proper mode of treating the same symptoms. Coach-painters can hardly be supposed to be more unanimous than professors of the healing art, particularly when the latter-named fraternity are leagued by all sorts of oaths and bonds not to affiliate or hold consultation with a school of medicine which proposes to kill or cure by some irregular method.

No doubt some will see a better road than we propose to travel to reach the same point, which is in every respect a perfect job in the way of carriage-painting.

The writer does not belong to that class which takes it for granted that a thing is good because it is new ; nor to those who cling to a time-honored custom simply for the reason that the same is sanctioned by long use ; nor to those who believe that any particular theory or mode of procedure includes all that is good and avoids all which is bad.

The prejudices of craftsmen are difficult to meet and

hard to overcome. One clings to a system and dogmatically pronounces it best, simply because he has never tried any other, and he hates innovation. Another readily adopts or tries all suggested improvements, and becomes an innovator because of the charms and excitements of novelty. As a rule, the first will win in the race ; but the second is useful in his day and generation.

Without attempting to trace the progress of improvement in vehicular construction, from the rude log-wheel carts of the ancients to the graceful and elegant vehicles of the present day, it may be asserted, without fear of contradiction, that there are few things in our advanced civilization and refinement which are more attractive, which combine more fully the useful and the beautiful, than the gracefully modeled, luxurious and comfortable carriages which are turned out from first-class city and country manufacturing factories.

To paint a carriage in the highest style of the art requires a judgment matured, an eye to appreciate combinations and contrasts, and a hand cunning and skillful to execute and perform. In nothing more than this is it true that practice alone makes perfect. Written rules and directions are valuable only as hints and suggestions which, if properly heeded and carried into practice, may lead to the correction of errors which exist because of the want of proper instructions. As well might one expect to educate the ear to harmonious combinations of sounds by a treatise on musical composition, as to teach the art of painting by mere words. Yet, while the finished workman needs no

written rules, there are many throughout our country, living remote from the great centers of population, who profess and practice the art of carriage-painting without the opportunity of perfecting themselves in the higher branches of the profession. In the hope that to such our directions may prove of practical benefit, we give the mode of proceeding in the old method of carriage-painting. Of the new and shorter method we shall treat hereafter.

CHAPTER XXXII.

PREPARATION OF THE SURFACE.

As the priming or first coating of the new wood initiates the operation, that simple process requires a word or two at the start : first, as to what shall be the material used ; and, second, how to apply it. And these are important questions, as the durability of the job depends in no small degree on the soundness of the initiatory proceedings. It will not be denied that whatever material adheres most tenaciously to the wood, which best resists the changes of temperature, dryness and dampness, and wear and tear, is the best, whether it be white-lead and raw oil, boiled oil, or japan, or wood-filling, or any other substance.

The Old Way of Painting a New Carriage.

For the first or priming coat, for the body, thin a small quantity of ground white-lead with raw linseed-oil, adding a few (say two or three) spoonfuls of japan for a drier, and enough turpentine to make the paint work easily. Apply an even coat of this paint with an ordinary bristle paint-

brush, taking care to work the color well into the nail-heads, crevices, and corners of the body, wheels, and carriage-part. After the body has stood for four days for drying, the carriage-part being meanwhile in the blacksmith's shop undergoing the process of ironing, mix the color for the second coat as follows : Dry white-lead, mixed stiff in japan and raw oil, equal parts, and ground through the mill. Thin to proper consistency with turpentine, and apply with an evenly-worn brush, taking care to work the color down smoothly. This coat should stand four days, for drying and hardening. After this, fill all the holes, crevices, chinks, and imperfections in the wood with hard putty, made thus :

White-lead.....three parts.

Whiting.....one part.

Wet with a mixture of

Linseed-oil.....two parts.

Varnish.....two parts.

Japan or gold-size.....one part.

When filling the screw-heads and other hollows, allow the putty to stand a little above the surrounding parts ; that is, the holes should be more than full to allow for any possible shrinking. All open-grained wood, as ash, must be filled with soft putty, made of white-lead wet with equal parts of varnish and japan, using a square-pointed putty-knife. Care must be taken to fill all the pores of the wood and thoroughly remove all superfluous material from the surface. Let the body stand three days ; at the end of which apply the second lead-coat, mixed, dry lead in three

parts japan and one part oil ; mix stiff, reduce with turpentine, and apply as before. Observe that care should be taken to spread every coat evenly, whether it be lead, rough-stuff, or color. This should stand three days before the application of the third and last lead-coat, which should be dry lead, wet with four parts japan and one part oil. After two days (four is better, if not pressed for time) the body is ready for rough-stuff. We can suggest no better mode of mixing rough-stuff than the following, viz.:

English filling.....	two parts.
Dry white-lead.....	two parts.
Wet with a mixture of	
Varnish	two parts.
Japan.....	one part.
Oil.....	one part.
Gold-size	one part.

Make into a stiff paste, and reduce with turpentine to a proper consistency for spreading with a well-worn brush. This should be allowed two days for hardening before the application of the second coat, which should be mixed in one half the quantity of oil used in the first coat. The following day the third coat, in which no oil should be used, may be applied, and again the next day the fourth coat, which should be mixed the same as the third coat—that is, without oil. The rough-stuff should, of course, be ground finely through the mill, as should all the other mixtures into which dry lead enters as one of the component parts. The last coat of rough-stuff should be followed

by the guide-coat of French yellow ochre, mixed in japan and turpentine.

The body may now go to the smith's to be hung up. That done, the wood-worker should smooth up all places where the beds may project over the axles, put on bands, etc. The painting process should now be resumed by priming the iron-work, which should stand two or three days to dry. While the carriage is hardening, the scouring of the body may be proceeded with. This should be done by an experienced hand, as great care is required to prevent the pumice-stone from cutting through the successive coats of paint to the wood. The lump of pumice-stone should be kept well filed, and plenty of water should be used to prevent the pores of the stone from becoming clogged with the paint. This process should be continued until *none* of the guide-coat is left, and, being completed, the body should be washed off with clean, cold water, using the water-tool for corners and for all places where the particles removed from the surface by the action of the pumice-stone are apt to collect. The body may now be left to dry for twenty-four hours, and work resumed on the carriage-part. First, cut down thoroughly every part with No. 2 sand-paper, dust off and apply lead-coat mixed as follows, and ground finely through the mill: Dry white-lead, in equal parts of japan and raw oil, reduced with turpentine. Judgment is required in the application of this coat, because, if the paint be too thin, the pores of the wood will remain unfilled, and, if too thick, it can not be spread evenly. Apply with bristle paint-brush, working the paint well into the wood.

This coat should stand at least four days for hardening ; but in the mean time it would be well to soft-putty the rims, faces of spokes, and all the flat surfaces of the carriage-part. Putty for this work should be made of dry white-lead, wet with equal parts of oil, japan, and varnish, using a square-bladed putty-knife. Work the filling well into the grain of the wood, taking care not to allow any to remain on the surface, because any loose particles not removed will crumble and fall away after the carriage has been for a time in use.

Returning again to the body-part, work is resumed on that by going lightly over the whole surface with the very finest sand-paper used for such work. Particular pains must be taken to clean out all the corners ; and, should any imperfection be discovered, any holes or crevices remain unfilled, the same must be stopped with quick putty, and the body will be ready for color.

It is proposed to dispense with the old and, it seems to us, unnecessary custom of going over the work again with what is called the surface lead-coat.

It will now be understood that the successive coats of paint, with the labor of rubbing and smoothing, have brought the surface to the best possible condition for receiving the first coat of color. This surface, which has been gained by the expenditure of so much time and labor, it should be the constant effort of the workman to preserve, because for a scratch or indentation there is no remedy but to go half-way back and begin again.

It is proposed to finish this job in black, that being

the most common as well as the most important of all the colors used in the carriage-shop. It does not take long to learn that black (which is the carbon resulting from the burning of animal bones in close vessels) is serviceable and valuable just in proportion to the minuteness of the division of the particles. Black, not finely ground, has little body and comparatively little adhesive property. The ordinary appliances and means for grinding colors in the paint-shop are not equal to the task of grinding black to that degree of fineness which is essential to produce the best effects in finished black-work.

Nor has there been, either in this country or abroad, until a recent invention, any machinery whereby hard pigments like black and some of the lakes could be reduced to that impalpable fineness on which their value and good working qualities mainly depend, without adding so much to the cost as to put them beyond the use of coach-painters entirely. Asking pardon for this digression, and taking for granted that there are at hand ground colors for coach-painters' use, and that the body which was left ready for color is to be finished in the best style, the next proceeding is to open a one-pound can of ivory jet-black, which will be done in a second with the help of a penknife-blade. Black ground by means of this improved machinery will be found finer than a few years since it was thought possible to reduce any substance, and so soft and manageable that it incorporates at once with the thinning, and the mixture becomes as homogeneous as though it were all one substance. Enough of this black to go over the work is taken from

the can and thinned with turpentine, using a trifle of raw linseed-oil if there be time. Apply with a flat camel's-hair brush, which leaves no brush-marks. This coat had best stand one day before the second coat of black is applied. That done, the work is ready for the first coat of varnish.

CHAPTER XXXIII.

CARRIAGE-VARNISHING.

THIS is a most important point in the process of our work. So far, all has been done with reference to durability, as well as beauty ; and, as a coat of bad varnish will nullify all that has been done in that way, it behooves us to be not a little particular about the matter. It is not for us to say who makes the best rubbing-varnish, but we have no hesitation in saying what, in our opinion, a rubbing-varnish *should be* to fulfill all the requirements of the occasion. It must flow smoothly ; it must dry hard, and yet elastic ; it must rub well, clean down well, and not sweat. If you can find a varnish fulfilling all these necessary conditions, no matter what name it may bear, apply a coat of it to the work in hand—not a heavy coat, but a light one—with a flat brush, of which there are several kinds intended specially for varnish. A thick, flat, badger-hair varnish-brush, of chisel-form, about three or three and a half inches wide, is recommended for such work as is now the subject of treatment. Such a brush, if well cared for, will last a lifetime and grow better with age. But let us return to the body,

which was left with one coat of rubbing-varnish, and which must now be put aside to dry for three days. During this time work may be resumed on the carriage ; first, by going over it again with sand-paper ; and now care must be exercised not to rub the sharp angles through to the wood. After this, dust off and apply the second lead-coat mixed as follows : Dry white-lead wet with a mixture of japan and oil, in the proportion of three parts of the former to one of the latter, and made stiff ; reduce with turpentine, and apply as before, observing the same directions as to grinding, reducing, etc. After three days another slight sand-papering, and the last lead-coat may be applied. In this last coat no oil need be used, but clear japan, and the paint should be applied as before. This being the last lead-coat, we, of course, depend upon it for the smooth, perfect surface required for the reception of the color, which, with striping and varnishing, is to complete the job. For cutting down this coat use No. 1 sand-paper, and be very careful to smooth out every corner and bead, and around every bolt-head, nut, etc., and remember that the bases of the spokes require attention equally with the centers, as also do the hubs and rims. This operation, simple as it may seem, is no “child’s play,” and must not be intrusted to a careless hand, as the same amount of rubbing applied to the sharp corners as to the flat and rounded surfaces, will remove all the successive coats down to the wood ; and, as these parts receive most of the wear and tear of actual use, it follows that these, of all, require to be best protected with the paint. The smoothing being properly performed,

and the loose particles removed from every part, nook, and corner, the work is ready for the first coat of color. That portion of the ground black remaining in the can after the painting of the body will be found—supposing it to have been kept well covered with turpentine—as soft and pliable as when first opened. Mix a proper quantity of this with turpentine, using oil if desired, and apply with a flat camel’s-hair brush. Ten hours will be sufficient to dry this coat, when the second will follow, mixed the same as the first coat. If the work is to be finished with a very wide stripe, put this on before the first coat of varnish. The carriage-parts being ready for the first coat of varnish, apply rubbing-varnish, which should be as good in every respect as that used on the body, and as carefully put on. Leaving this to harden, return to the body, which was left with one coat of varnish, and it will be found hard enough for the first rubbing. Provided with a piece of cloth or felt and finely pulverized pumice-stone, a water-tool, and plenty of clean, cold water, proceed to cut down the varnish as closely as possible, being careful not to go through to the color, and not to allow the pumice-stone to dry on the varnish; use the water-tool freely in all the corners and around the moldings. This operation will be repeated through three successive coats of varnish, and the body is ready for the trimming-shop. The carriage-part must now be subjected to the same rubbing process as has been applied to the body. This work must not be intrusted to unskillful hands. An expert only can do it to perfection. If performed by inexperienced hands, the result will be an untimely stripping

of all the sharp angles, and the prospect of a well-finished job materially impaired. Supposing this delicate operation to be successfully performed, the striping is next in order. On this subject there is not much to be said. If any one supposes he can do this because he has been told "how to do it," a single attempt will be all-sufficient to cure him of his vain delusion. There is no royal road to this accomplishment ; its attainment is through the steep path of long-continued practice. The striping done and dry, a thorough washing must follow, and be sure that every particle of dust you leave upon the work will be found by the varnish-brush, and carelessness in this respect has too often called down maledictions on the head of the innocent varnish-maker. The carriage-parts, removed to the varnish-room, are ready for the finishing-coat, and the writer confesses himself at a loss how to give *any hints even* which shall prove of value as to the successful performance of this, of all, the most important in the whole proceeding. A knowledge, not only of the nature of varnish generally, but of the particular varnish to be used in the operation, is indispensable to success. To become an adept in this art requires long experience, confidence, and self-possession ; and, we may add, a good conscience. A mistake in this is little less than a crime ! And your shortcoming will not only rise in judgment against you, but will be known and read of all men.

The body received from the trimming-shop is ready for rubbing, preparatory to the finishing-coat of varnish. This, too, is a delicate piece of work, and requires judgment, skill,

and practice. Remember that a *mote* on a panel becomes a *beam* in the eye of the beholder, and the smallest speck looms up like a distant hill in a misty atmosphere. Having completed it (for better or worse), close the door reverently behind you, lock it, call on your good angel to protect your work from harm, and await the result.

If not pressed for time, it will be well to allow the body to stand over one night before finishing. Remove it to the finishing-room, which was put in order the previous evening; wash it off thoroughly with cold, clean water, using a clean sponge and a chamois-skin which has been well broken in. Do not use dusters which have been used on lead or color, or the moldings will be discolored. After dusting off well, take a dry, flat fitch-brush, and wet the ends of the hair with a small quantity of varnish. Let this stand for half an hour, and then go carefully and lightly over the whole surface. This will pick up every particle of lint and dust, and there remains only to apply the varnish. This you will do, as you say your prayers, alone, and, having finished it, you may retire, quietly locking the door behind you, keeping it locked until the surface is no longer liable to injury from dust.

The next thing in order is to care for the tools. The brush used for picking up the lint should be first softened with a little oil, and then thoroughly washed with soap and water, and carefully put away for future use. Remember that good work depends in a great measure on the strictest attention to cleanliness; and a sloven can not, in the nature of things, produce a perfect job in carriage-painting.

“*Neatness, order, and economy*” should be the motto in every paint-shop.

The work which has been under way for a period of five weeks may now be looked upon as finished. It may stand a few days to harden, and then be hung up. The bolts, etc., having been blacked off and dry, the completed carriage should receive the first of repeated washings which it is destined to undergo; but this clean, cold-water washing should be done by an experienced hand; otherwise it is better left undone. If properly performed, it will tend to harden the varnish and will rather improve the general appearance. The finished vehicle may now be turned out for service, and there need be little apprehension that the painting will not prove a durable and creditable job. It might have been completed in much less time, and have presented to the eye quite as good an appearance. A great many carriages are so finished, and they may, and do, no doubt, stand the ordinary wear and tear of country roads pretty well; but, for use on city pavements, *time* is an indispensable element, and it would not be safe to finish work for city wear in less time than we have given to the job in hand, unless some other and shorter method be adopted.

CHAPTER XXXIV.

THE NEW METHOD.

FOR the last ten years ways and means have been devised, and many efforts made, to shorten the process of carriage-painting—to expedite the work and turn it out in less time. The pace has not been fast enough for the “times,” and quicker, shorter ways of arriving at the same result have been sought for, if not discovered. Keeping in mind the grand, pervading principle of compensation, we are not of those who believe the time heretofore deemed necessary to produce a first-class job of coach-painting can be materially shortened, at the same time retaining *all* the good features and results of the slow process : that is to say, the chances are altogether in favor of durability, when oil enough has been used in the painting to insure elasticity, and prevent the material from drying to that flinty hardness which can not be supposed to bear the shaking and concussions which all wheeled vehicles on city pavements are necessarily subjected to, without cracking and, perhaps, chipping off. In short, the mode of painting carriages, such as we have described in the foregoing pages of this book, involves the expendi-

ture of a certain number of days, which can not be materially curtailed without incurring the risk of what has been too common of late, viz., jobs which soon perish with the using. If haste be a *sine qua non* with the painter, if the work must be completed in half the time heretofore deemed essential in the production of enduring carriage-painting, it is suggested that some other mode be adopted. If we will have railroad speed, we must abandon the stage-coach system.

In writing about our "new way," we propose to give the results of our own experience—to present the facts as we find them, leaving every man to his own judgment as to which course he will adopt or pursue.

Some time has elapsed since we inaugurated our experiments and practice, looking to the compounding of such a mixture as would permit of shortening the time without impairing the durability.

We have long been of the opinion that coach-painting could be reduced to a more perfect system, resulting in the end in more durable work at a less cost. All our experiments have, therefore, tended toward bringing about such a result. As remarked in the second chapter of this treatise, and Chapter XXXII of the book, the "priming" being all-important, we have concentrated our efforts in the direction of producing such a substance as shall close the pores of the wood against the absorption of after-coats, as well as of dampness. In a word, this substance is intended to cement the surface of the wood. Our experiments have resulted in a "priming" for first coats upon new wood and

iron, which comes nearer to possessing the above-named desirable qualities than any article ever used for coach-painting.

The results of these experiments are as follows :

1. The effectual closing of the pores of the wood, so as to prevent the possibility of dampness going through the priming.

2. Absolute certainty that oil used in after-coats will not be absorbed by the wood ; and, as a consequence, the effectual prevention of the showing of the grain after the work in hand shall have been finished.

3. Drying to a hardness which insures a solid foundation, and the paint, having become cemented into the grain of the wood, can not be made to chip or flake off.

To give the reader a clearer idea of what we mean by cementing the surface of the wood, we make the following illustration :

It is well known that a coat of lead in linseed-oil, applied to a sheet of tin, will not, after it has become dry and hard, lose its elasticity, simply for the reason that the tin does not absorb the oil.

The same mixture, applied to wood, will become, in the process of drying and hardening, lifeless and brittle, because of the fact that the ever-hungry wood will absorb or drink up the oil and leave the pigment dry. To close the surface against such absorption is what this new priming is intended to do ; and if this be accomplished, all “after-coats” must necessarily retain their elasticity, and, once hard, “grain-showing” is effectually prevented ; which, in

our opinion, has always been caused by the porous wood taking in a large proportion of the oils with which primings are compounded, leaving the pigment dry and non-elastic. In considering this matter, we have not lost sight of the fact that the wood-fillers now in use, which *never* become hard, but retain their stickiness, are in every sense as bad as the substance from which the wood will absorb all elasticity, *because* such a coat being soft when succeeding coats are applied, there is a gradual giving way of the whole foundation, thus affecting the finishing-coat of varnish and causing a broken surface.

It is not to be supposed that any new claimant for public favor can find it all at once. Many pertinaciously cling to what has been tried and not found wanting. The bridge is good which carries safely.

But to the *modus operandi*. This priming should be proceeded with as in the use of lead. It must be put on evenly and well brushed into the grain of the wood, and under no circumstances must the beads and corners be left full of the material.

A short, well-worn brush is best for applying it, and the work should stand two days before the application of the first coat of rough-stuff. Putty on this coat of rough-stuff after two days (summer heat), and give the putty two days to harden before applying the second coat, and then apply a coat a day until the job is filled.

Apply the guide-coat and rub down and finish as in the old way. The carriage-part, coming from the smith's, should be trimmed up, bands put on, etc., and thoroughly

sand-papered, cutting close down to the wood. Dust off carefully and apply the coat of priming to every part, iron-work included. Brush the priming well into the grain, taking care not to use too much. *A thin coat is best.* Next day putty rims, faces of spokes, and all flat places evenly with soft putty made elastic. The usual mode of proceeding is to smooth down next day for color ; but our practice has been to apply with a flat camel's-hair brush a coat of "carriage-part filling," reduced with turpentine to the consistency of color, previous to sand-papering ; this will insure a perfect surface. By adopting this mode of proceeding, the sand-paper will not be apt to clog, and tear up the "priming," and, if proper care be exhibited in rubbing down, the carriage-part filling will come off, and there will remain a good surface without injury to the foundation. Sand-paper the next day, dust off, and apply first coat of color, made more elastic with oil and varnish than for coloring over lead-paint.

From this point all subsequent proceedings up to the finish will be the same as the old method.

Such has been our mode of proceeding in the use of the "new priming." There may be better and shorter methods, but the results of our experiments have been satisfactory.

Disclaiming any intention of dictating a rule of action for the conduct of others, we suggest a trial of the mode above described to those who have not given the matter any attention. Every painter is supposed to have his own peculiar ways and notions as to how painting should be

done. With these we have no desire or intention of interfering. The trade of coach-painting is not to be classed with mere mechanic routine. It rises out of mechanical drudgery into the domain of art. The ability to perform such work in all its possible completeness and perfection is an accomplishment of which any man may be justly proud. It does not seem that any labor-saving machinery can be brought to bear upon it in such a way as to lessen the necessity for cunning and skill, for education and taste.

Referring again briefly to the new mode of carriage-painting, we would remark that the question of time, durability, and cost, being all involved in it, the subject is entitled to a careful investigation.

CHAPTER XXXV.

PAINTING AND VARNISHING.

PAINTING and varnishing are operations which are not generally considered in their true respective forms and proper light. These operations are in the nature of things akin to that of plastering, and should be so looked at if we would find the true cause of, and remedy for, the troubles which the work of carriage-painting necessarily involves. We allude now to the trouble known as chipping, peeling, or cleaving of the varnish from the underneath coat or surface of color. Painting differs from plastering mainly in the lesser quantity of material used, and in the different modes of application—the one being done with a brush, the other with a trowel; but it is equally necessary and important, in either operation, that there shall be a surface to which the material may cling and fasten; or it will drop off from the spoke or wall—as the case may be—whenever the dislocating force shall be sufficient to overcome the slight cohesive power of the particles of paint, or plaster, or varnish.

If a plasterer should put his first coat of mortar on

laths which were closely in contact—each particular lath as near to its neighbor as the lathing-man could stick it—and that plaster should, on drying, drop off, what would be thought of the mason who should complain that the lime, the sand, and hair, were deficient in adhesive qualities? Or, suppose the plasterer should put a coat of hard finish on a previous coat of the same—taking care to grease the first coat well—and should, on the dropping off of the final coat, cry out against the plaster, and on that unoffending material lay all the blame of his shortcomings?

The object in this present writing is to set forth, as lucidly as may be, the general and particular failings and shortcomings of carriage-painting, as usually, and we may say almost universally, practiced. The obstacles in the way of first-class work are not few or strange. All who are in the trade are familiar with their several and respective features, and would gladly be rid of them. In naming these shortcomings, we put them in their order of importance and frequency, thus: cracking of paint and varnish, chipping or flaking of varnish, and premature perishing of paint and varnish when the *foregoing*-named mishaps shall have been avoided.

Now, there can be no doubt of an existing disposition on the part of carriage makers and painters to so examine this question as to arrive at the true cause or causes of these accidents, and, if possible, to prevent their recurrence. We are talking of no new thing, but of what has occurred often and again, and which we fear will recur, in spite of all we may write to the contrary.

If this monster had a single head, we might kill it at a blow ; but, unfortunately, it is “hydra-headed,” and when one head is killed another freshly succeeds to its place. So, to account for all these mishaps at a word, seems simply impossible. A primary cause of failure in the painting department of carriage-manufacturing may be the partial seasoning of the timber, and consequent shrinkage and rearrangement of the particles. Weather-changes during the process of painting and varnishing may be potent for evil, and most difficult to understand and guard against. Badly ventilated work-rooms, where no provision is made for needed circulation of air ; adulteration of leads, colors, oils, turpentine, varnish, and driers, are fruitful sources of evil. Want of skill and good judgment on the part of the workman cause many calamities ; rubbing-varnish made to dry in a day, plentifully cheapened with resin ; japans made from kauri-gum or dammar, or both ; mixing of color without regard to proportions in the thinning materials ; the introduction of different driers without knowledge of what the result of such mixing will be ; lastly, and most prolific source of evil, is the undue haste in the completion of the job in hand, with little or no regard to the time actually necessary to properly accomplish a first-class piece of work.

We do not pretend to have enumerated *all* the causes of failure, but enough, possibly, for the present theme.

CHAPTER XXXVI.

EVILS AND THEIR REMEDIES.

NEXT in importance to finding out a cause of evil, is to provide or suggest a remedy. We would like to present a remedy for every ill, and make the way so plain that any man, though a coach-painter, need not err therein. How to do it, and how not to do it, are now the questions. Listen to our theory: Assuming the wood to be properly seasoned and ready for paint, the priming is most important; because it is absolutely necessary that the coating on the wood shall hold its place from first to last—through thick and thin—under all vicissitudes and untoward circumstances, giving or yielding not a jot, not a particle. With such a foundation good work is possible; without it, not. What shall it be? Not something that will dry in half a day. As a rule, the longer paint stands without hardening—supposing the same to be properly compounded—the more tenaciously it will cling to the surface on which it may be placed. All drying substances tend to lessen the enduring qualities of linseed-oil and hasten its disintegration and decay. Therefore, the more oil in the priming-

coat the better—supposing it shall have ample time to dry. We treat now of the old process of lead-priming ; but there is a proper system and a key-note ; and that key-note once struck, all after-proceedings should be in consonance with its vibration. If the key-note be the lightning-speed process, let all subsequent proceedings be in harmony therewith. Better so, than introduce an elastic stratum somewhere in the layers. A quick-drying color put on a foundation which is soft all the way up, will, in the nature of things, crack all over. This is an every-day experience, and the disappointed workman—wanting a better theory—lays the blame upon the color. Hasty and ill-considered condemnation shows want of balance. Before laying the blame on the color and condemning *it*, the painter should assure himself that there exists no other possible cause for the disaster. A coat of the same color, applied to an old spoke or to a strip of glass, would probably exhibit an entirely different state of things. But to return. Suppose the work to have received an honest coat of priming, and the workman compelled to rush that work along, without giving the first coat a fair time and chance to harden properly. Making the best of the conditions and requirements, the painter (who is, we suppose, a man of long experience and sound judgment) puts on another coat of lead properly mixed, and, in consonance with the theory of following the key-note, keeps this, as all succeeding coats, sufficiently elastic to prevent cracking, yet knowing all the time that none of the coats are hard, but the mass is soft all the way through. Now, in finishing over this foundation, he will

—being, as aforesaid, a man of sound discretion—use an elastic varnish, and so do the best that can be done under such circumstances. The work being finished, and run out, and put to the test of actual wear and tear, will show—what result? It may not crack nor chip, but nothing is more certain than the fact that—like the seed sown on stony ground—it will perish, alas! all too soon. The fact must not be lost sight of, but kept ever before the eye and the mind, that in carriage-painting—as in almost every other process in art and science—*time* is an element which can not be disregarded with impunity. On the contrary, it must receive its due weight and acknowledgment, or the operation wherein it shall not be properly heeded will end in disaster. If the manufacturer will not afford the painter proper and reasonable time wherein he may accomplish his work, he should at least have the grace to put the blame for failure where it properly belongs, and not on the shoulders of the innocent workman, or, still worse, on the head of the maker of the last thin coat of color. We believe the case of the captive children of Israel has its parallel in the carriage-trade, and that the carriage-painter is oftentimes required to perform a labor more difficult of accomplishment than was required of the Jewish bondmen by their Egyptian taskmasters. To make sun-dried bricks without straw may, so far as we know, be within the limit of human ingenuity; but to begin and complete the painting and varnishing of a carriage—so as to secure the best results as to durability—in the space of two weeks, is a feat beyond the skill of any man who ever yet painted carriages

on this mundane sphere. What the denizens of the lunar conglomeration may be equal to, in this line, we shall know one of these days, perhaps !

Again, the painter or workman is too often required to do in a given time what can not be properly accomplished within the specified limits. Take, for example, that most important work of properly filling up a carriage-part, keeping the corners clean, and smoothing up every part as it should be. Let us anticipate the consequences in a case where the painter is required to do this job in about one quarter of the time which should properly be devoted to it. In the very best aspect of the case, there must of necessity be masses of thick paint left in the corners, around clips, between the leaves of the springs, and at the end of every spoke, which should not, with a view to a durable job, have been left to repose there. No amount of time given this work to dry, no care in the details of finishing, ornamenting, or varnishing, will prevent these masses of dried putty, as it were, from being disengaged from their resting-places and dropping off when this carriage is subjected to the jolting and consequent vibration caused by rolling the wheels over stone-paved streets.

CHAPTER XXXVII.

CLEAVING OF VARNISH FROM THE COLOR.

THE next most common and vexatious trouble with the painting, is the flaking or cleaving of varnish from the color. This is no new thing, but has existed, we suppose, since the invention of the art of varnish-making. Some of the causes of this annoying accident may be enumerated here—we do not pretend to give them all—as follows : Cotton-seed oil in the color, however small the quantity, is a prolific source of evil in causing the varnish to flake ; japan, made from inferior shellac, mixed with other and cheaper gums ; color mixed with japan, varnish, and oil, when the due proportion of each is not properly attended to ; varnishing over a glossy surface ; fatty substances, whether turpentine, oil, or paint ; certain rubbing-varnishes unskillfully or carelessly made, or made from unsuitable materials, will cause this trouble. These are among the sources of this evil. No doubt there are others. A word of caution to painters just now may be pertinent. If you do use oil or varnish in ground colors, even in those ground in the shop, bear in mind the fact that the latter

must in all cases be superior in quantity to the oil. No doubt, trouble in many paint-shops has resulted because the painter has never fully appreciated the fact that varnish, oil, shellac, japan, and turpentine may be so mixed as to give a surface which no rubbing-varnish will adhere to. Really, too much caution can not be exercised in putting these thinners together. There is nothing so good for a "binder" as pure, unboiled linseed-oil, because it rarely, if ever, gives trouble, if used only in proper quantity and proportion.

A glassy surface must not be varnished, but must be reduced to a "scratch-coat" by the application of pumice-stone and water.

The use of two driers in the same color is deprecated, unless the user shall know, with a knowledge gained by abundant experience, just what the effect of such mixing will be, and whether or not these driers will work well together.

Colors must never be finished with a japan gloss.

All paints, oil, driers, and turpentine should be kept, as far as possible, in air-tight vessels. Color-cups must be kept covered, to exclude dust and air.

Every foreman in a carriage paint-shop should *mix all the colors*, supposing he has time so to do. If not, he should intrust this most important operation to some *one* experienced hand, and not to *any* man or boy he may have under his charge. By strict attention to these little details, many of the troubles of the paint-shop—as pitting of varnish, cracking, flaking, or premature perishing of the whole—may be avoided.

Now we come to a point in this question wherefrom we propose to discuss the comparative merits of ground colors with those as before produced in the carriage paint-shop. First, we claim that these colors are economical to the last degree ; that to use them costs nothing, for the reason that the labor of producing their equivalent in the paint-shop would be more than the cost of ready-prepared colors. Second, they are permanent beyond anything ever displayed ; and uniform to a degree that the painter need have no fear of not being able to duplicate any job he may have before turned out.

It is claimed that, since the introduction of prepared colors, the waste in the paint-shop is one third less than before ; that the labor and waste in grinding colors in the paint-shop exceed the prime cost of these goods ; also, that there is a saving in varnish, as no extra quantity need be applied to cover up a sanded surface. The claim is, that the labor of painting a carriage is much lessened by the use of these colors, and that the labor and time saved by the use of ready-made colors in painting a carriage will be more than the cost of the paint consumed in the job. This is a feature to which we would call the special attention of the manufacturer, because of the fact that while the outlay of money for materials is something tangible and always patent, the expenditure for labor is in a measure intangible—less observable, and much more difficult to measure, and weigh, and count. There is, too, what we choose to designate as a false economy—a “penny-wise” policy—exhibited too frequently by purchasers of colors, which in other departments

would be looked upon as extreme folly and stupidity. We allude to the common practice of procuring paints similar in name to those which the purchaser has been using, simply because these paints are offered at a nominally lower price. In too many cases the consumer does not take the trouble to learn, by experimental test, whether the nominally cheaper colors are worth as much as half, or only a quarter as much, as those he has been using ; but rushes to the conclusion that, being cheaper in *name*, they must of course be cheaper in *fact*. There is, too, in this, a peculiar absurdity, from the fact that the cost of the color actually consumed on the finish-coat of any light carriage is very trifling, and that which works best and covers the undercoat most completely, everything else being equal, is the cheapest at whatever reasonable price, because of the consequent saving of material and labor. Any sane person in the trade will admit that a painter would not necessarily have made a good bargain simply because he had bought a hundred pounds of so-called coach-black at ten cents a pound. The chaffering for a few cents a pound difference between an article that has been tried and never found wanting, and one which has never been tested, is, we think, not the right road to true economy. For example, suppose you have been using a certain black, and have found it to be uniformly fine, of good body—always working and covering well, and drying invariably so as to take varnish in the number of hours allotted to it. In the strife and competition for trade, some would-be rival or competitor offers you a paint in substitution of this well-proved article

—bearing the same name, at a price ten cents a pound less than you paid for the former color. Of course, in using this you are trying an experiment to your own cost if it fail, and with a gain so small, in case of success, that there is nothing in the best aspect of the case to pay for the risk. One pound of a certain black will, say, coat two light carriage-parts. Admitting that the ten cents a pound is an important item, there yet remains the fact that the greatest possible accomplishment in the way of saving would be five cents on a four-hundred-dollar job ; while, at the same time, the experiment may involve a loss of twenty or thirty dollars, and possibly two or three days' delay. Again, there is another most important feature involved, viz., the question of permanence, of durability. This can be tested only by time ; and years must necessarily elapse before this question can be settled. We would not convey the idea that the practice of such false economy is common in the trade ; indeed, such practice is the exception and not the rule ; but there are, and always will be, in every calling, short-sighted individuals, who take the name for the thing—the word for the fact.

CHAPTER XXXVIII.

HOW TO GET THE BEST RESULTS.

HAVING detailed somewhat this question of superiority, we take it for granted that all will admit the correctness of our premises and our conclusions; as also the fact that much has been accomplished in the way of lifting the business of carriage-painting out of the slough of despond—so to speak—in which it once was, and in overcoming the most formidable of the difficulties heretofore existing in the carriage paint-shop. All this has not been done without a vast expenditure of time, talent, energy, experience, and money. Machinery best adapted to bring about the desired result has been constructed without regard to cost, and vexation and disappointment were in many instances the only fruits of costly and laborious experiments. The demand for ground colors is certainly and steadily extending, and in a few years will include all places where, in the civilized world, carriages are made and painted. Admitting all these claims, the next question in importance to the trade is how, in what way, by what mode of proceeding, can the best results be realized in the use of ready-made colors.

Listen while we review the subject in the light of ten years' every-day experience, and set forth what we have found to be the best way to do it. Premising with the somewhat trite proverb that "economy is wealth," we would impress most distinctly the importance of not taking from the opened can of paint more material than is just amply sufficient to complete the job in hand. This point having received due attention, scrape cleanly and neatly the color from the sides of the can, level the top of the remaining mass evenly, and pour thereon sufficient turpentine to quite submerge the whole ; then cover all with the top of the can, and put away carefully for future use. We refer now, of course, to the ordinary can. With the patent-press can, the contents will, as it were, take care of themselves. We take it for granted that the mixing-cup was scrupulously clean to begin with. In thinning, first add a small quantity of turpentine, and stir till the whole mass becomes smooth and homogeneous. Do not add the turpentine all at once. First stir the color before adding any ; then pour it in, little by little, stirring all the time, until the contents of the cup shall present a smooth, even mass, giving it the appearance of a perfect solution. The color now under consideration is supposed to be black. In its present state it is a quick-drying substance, and if the exigencies of the case required, could be used so as to dry ready for varnish in less than an hour of time. This same mixture, if put over a ground not thoroughly hard and dry, would crack all to pieces. To escape this dilemma, supposing the workman is required to finish quickly over a

soft underneath, we would suggest adding to the color a quantity of elastic rubbing-varnish, so that the coat will dry—not hard, but, in a measure, yielding. The present case, however, supposes ample time and no extraordinary haste, and that the mode of operation is to apply one coat of color only on a single day—which is, in our judgment, the right course ; in such case, leave out a portion of the turpentine, and add in lieu thereof a small quantity of pure raw linseed-oil. As before said, this black, thinned wholly with turpentine, will dry ready for varnish in an hour's time, or less ; and this coat may be varnished over in that short time with safety, supposing the ground to be perfectly hard, but not otherwise. Yet we claim that, for many reasons, it will always be better to leave the job unvarnished overnight. Black, if varnished too quickly, will not give the same shade and density of color as when allowed ample time to dry. Any doubts existing as to the correctness of this theory may be removed by the following-described proceedings : Let the painter take an old spoke, paint it black, and leave it to dry overnight. Next morning, let him draw a broad line through the center of it, using the same color as in the first coat, and in an hour after putting on the stripe let him varnish over all. This coat of varnish will reveal the fact that the stripe is not so black as the body of the spoke by ten shades. This is one good reason why a black coating of color should be left overnight before varnishing. Another reason for such a course is, that long experience has taught us that no painter, however skillful, can perform a perfectly satisfac-

tory job in coach-painting who does not give each and every coat of paint and varnish time to become dry and hard all the way through. In our judgment, ninety per cent. of all the carriage-painting done in the United States is done too quickly ; yet we admit that some of the best jobs—to look at—have been done in this manner. Such work, however, when put to the test of actual use, does not endure as does work where time has been duly given to all the processes.

Referring again to the discoloration of black because of being varnished over too quickly, and of the occasional complaints because of this, we have to request that each and every painter among our readers shall investigate this question for himself and his own convincing.

We do not propose to consider each and every of fifty or more coach-painters' colors in detail. What has been said respecting black will apply in a general way to all the body-colors. It is, no doubt, true that most of the foremen painters in the carriage-shops throughout the country have, by use and experience, familiarized themselves with ground colors to such an extent that they require no advice or direction in the matter. Yet there are doubtless many in the trade who would gladly receive instruction as to the way of working lakes and carmines, in order to produce the best results with the least expenditure of labor and material.

In all operations, a great deal depends on getting a fair start. Therefore, we would have all learners lay to heart this important truth : in all lake or carmine jobs, *let the*

ground be as close an imitation in tone of color to the glazing as possible. This we believe to be the proper starting-point, although we are conscious of the fact that we are not in this particular in full agreement with every member of the trade. To those, however, who would take exception to this our position, we would put a query: Would you attempt to produce a good job in carmine by glazing over a black ground? We anticipate to this question an answer unmistakably negative. If, then, to produce a good job in carmine—which is not only the brightest in color, but the most transparent of all the lakes—requires a rich ground in correspondence with itself, can there be any reason why the same rule does not hold good with all glazing colors? Supposing, then, the adoption of this principle, and the work prepared in accordance thereto, the next important question is the preparation of the color. It is taken for granted that the cup is clean, and that only enough color has been taken from the can to finish the work. To this must be added a very small quantity of pure spirits of turpentine, which must be well stirred in and thoroughly incorporated with the color. *This* must be repeated until the color in the cup is well broken up, smooth in the mass, and entirely homogeneous. Then add as much raw linseed-oil as the color will bear, and yet dry, ready for varnish, by standing overnight. After the oil, add turpentine to thin to proper working consistency. It must work freely and flow perfectly. Nothing can be gained, but much may be lost, by working the color too thick. If the foregoing directions be followed, and the color be applied

with a flat camel's-hair brush *by a good workman*, there need be no fear as to the result. One coat of color and one of color in varnish upon a carriage-part will be enough ; but this will not be sufficient for panels. Another mode of operation in transparent painting is to put the color in varnish and flow on over the ground. This is, perhaps, the best mode in painting *bodies*, as a little color can be put in each succeeding coat of varnish until the last, which, of course, must be clear. This will give the best possible tint or color, and will prove a lasting job.

CHAPTER XXXIX.

ADULTERATION AND WASTE.

THE money value of paint wasted in this country is enormous—greater, perhaps, than in all the world besides. Our reckless prodigality, in a certain way, is only equaled by our absurd attempts at economy. For example: a painter will sometimes spend the time and exertion necessary to walk a mile, all for the purpose of purchasing a can of paint a shilling less than he can buy it for under his very nose, and then neglect the proper precaution and preventive to waste, by omitting to cover up and take care of whatever paint may be remaining after the job is finished. Now, a quarter part of the time and labor necessarily expended in saving the shilling, devoted to care and cleanliness, would have resulted in the saving of twice that amount. Another absurdity: a slavish devotion to names. When will men learn that two things are not necessarily the same, because they may be called by similar names? Take, for example, the greens used in carriage-painting. These are either chrome or copper greens, and are briefly described in the foregoing pages. The *body* greens are

chrome colors and the diaphanous greens are copper colors, as a rule. Chrome-green, when pure, is of a dense body (almost, in this respect, rivaling lampblack), and covers and conceals all it touches, whether white or black. A fair selling price of this pure green, dry, would be about eighty cents per pound to consumers, and at this price it would be the cheapest green obtainable. Yet the probabilities are that a pound of this color, under its own proper name, can not be found in any carriage-shop in the United States. What, then, do we buy? Listen! The so-called "chrome-green" of commerce is simply silica, sulphate of baryta, or carbonate of lime, colored with chrome-green, in proportions varying from (the best), say, one pound of color to five pounds of the base, to one pound of color and two hundred pounds of the base; and all is sold as chrome-green! Now, this earthy base, which is transparent when mixed in oils, adds to the value of paint in the same manner and degree as watering milk, sanding sugar, or mixing shoddy with wool in the production of cloth, adds to the value of these articles respectively. What the painter requires is color, *not* sand! And, considering that he has to pay vastly more for the color he buys when mixed *with* the sand, it would seem not to require a very elaborate argument to convince the dullest comprehension that for the consumer pure colors are the cheapest. Some idea of the coloring property or power of real chrome-green may be had by reflecting on the fact that a single pound of it will impart its tone of color to a hundred pounds of a glassy, translucent substance, causing it "in the mass" to resem-

ble the pure green itself. I say "in the mass," for when this pretended green paint is spread upon a piece of glass, and viewed through a microscope or magnifying-glass, it presents the appearance of vitreous minute grains, with a speck of color here and there, like small sea-birds scattered along a sandy beach. That a painter had better buy the color unmixed with the sand, would seem a self-evident proposition.

Dropping casually into a carriage paint-shop, not long ago, we espied a can, with a label on it, signifying that it (the can) did contain, or had contained, ivory-black in japan. It was uncovered, and exposed to the dust, dirt, and drying influences of a warm atmosphere. We looked into it, and found it contained about two thirds of its original contents; but of its original value not a fifteenth part was there. One after another of the "hands," in want of a little black, had dipped into it with the palette-knife, and the deep pits or holes were left, unfilled, to dry around the sides, and thus waste the material in the speediest possible manner. We asked the foreman how he was suited with these goods. "Oh!" said he, "the black is first rate, *but it dries up so!*" We thought, if it did not dry under such treatment as that, it would well deserve any amount of maledictions.

The utmost care and attention, and the most scrupulous cleanliness, are indispensable to economy and good results in the carriage paint-shop.

CHAPTER XI.

THE USE OF READY-GROUND COLORS.

THE extreme adulteration of paints, which has of late years become so great an evil as to work out its own cure, has not wholly grown out of a disposition on the part of the manufacturer to secure immoderate profits. The consumer has been most to blame, because of the ready credence he has given to the promises of needy and unscrupulous sellers, who have promised to give him more for his money than it is worth. It would seem almost beyond belief that a coach-painter would risk spoiling a job in the hope of saving a half-dollar on a gallon of varnish ! Would such a case be a novelty ? The adulteration of paints is so difficult of detection as to make the practice of it easy and comparatively safe. Take, for example, the article of carmine. In a color so expensive as this, a small percentage of adulteration makes a material reduction in the cost. A single ounce in a pound of this expensive color would afford a larger profit to the seller than is usually realized by those who sell it pure at first hands. Nor could this be detected, in using, by the most skillful

and practiced painter. The cheat would be revealed only by the untimely fading of the color, and that would be too late to remedy the evil. In carriage-painting, immediate effects are less important than remote consequences.

The colors referred to are prepared expressly for use in carriage-work, and with reference only to the requirements of the trade. They are finer than it is possible to make them in the paint-shop, for the reason that a specialty is made of this business with means and appliances which do not exist in the paint-shop. To illustrate the convenience of these colors, suppose a case : Two or three new spokes in an old wheel are to be painted. The time necessary to prepare the paint from dry materials would be more than sufficient to match, paint, stripe, and varnish, with colors ready at hand. Or, suppose an old carriage to be revarnished. The color is mixed to match on the stone, and afterward run through the mill. In the grinding process the color has changed, and is no longer a match. This may not be discovered until the application of varnish ; perhaps not even until the job is completed and placed in a stronger light. The result is general dissatisfaction ; but, suppose it to have been discovered in the process of grinding, the change involves an addition of various colors : one after another is added, and with loss of time, to say nothing of loss of patience ; the result is, a quantity of paint sufficient to paint two carriage-parts, which, of course, is almost worthless for other work, and finds its way into the waste- or slush-tub, as it is not very elegantly termed, in the paint-shop. Had ground colors been on hand, the match could have been

made in one quarter the time and with one quarter the stock, and the saving would have been both in time and material, and the danger avoided of mismatching the color in the process of grinding.

It may be said that a thoroughgoing, practical painter does not make such mistakes ; but such work is not always done by that style of workmen. It is often intrusted to boys and other persons of immature judgment ; and, in spite of all that may be said, such mistakes do happen in the best-regulated shops. Suppose another case : A new body is ready for color—an ordered job—promised on a certain day. Time is limited, and a mistake now is little less than a crime. The paint-shop is short of hands. The foreman, driven with other work, finds just time to mix the black on the stone, put it into the mill, turn the screw, and give pressure enough to insure moderately fine color. The day is a hot one. The crank turns slowly under the hands of the perspiring juvenile, who, like Mantilini, feels his life to be “one demnition grind.” Tired and disgusted—not appreciating the importance of fine colors—he gives the thumb-screw a half turn, and, presto ! the crank goes to a lively tune, the color comes out in no stinted quantity, and soon the task is at an end. Leaving the mill, which he neglects to clean, and the pot of half-ground color, and feeling himself entitled to a half-hour’s recreation in reward for his industry and perseverance, he disappears, and the foreman comes from the varnish-room with just enough of daylight left to color the body. The application of a single brushful of the paint informs him that in fineness it

is equal to No. 2 sand-paper ; but there is no time to grind a fresh lot, and the cup of thin color could not be made fine in a week. So the boy, being found, is presented with a coat of—well, not blessings ! The body, unpainted, stands till next day ; or, being *smatted*, the surface requires an extra coat of rubbing-varnish to present a respectable appearance. Do not such accidents frequently occur in the paint-shop ? Ground colors offer a remedy, sure, safe, and economical, for all these complaints. Try them, and be convinced.

These colors should come into general use, not only because they are *finer* than any other colors, but because they work more freely, flat more perfectly, and dry more readily than any others. After conversing with more than five hundred painters as to the cost of grinding colors in the shop—the extremes in the estimates given being thirty cents as the minimum and one dollar as the maximum average cost for labor alone, and a waste of from ten to fifteen per cent.—we think we may aver that prepared colors, on the score of economy alone, to say nothing of all the other advantages, are worthy the attention of all who buy and use paint.

CHAPTER XLI.

HOW TO MAKE THE BEST JOB IN BLACK.

A PURE black is, in theory, the absence of all the primary colors and of the extreme color, white. The presence of any one of these detracts from the entireness of black. So, when black is viewed through any colored medium, it ceases to be pure black, and assumes that tone of color which would result from *mixing* the color of the medium with the black. For example : black, when viewed through a medium of yellowish varnish, reflects, however slightly, a greenish hue ; and, the greater the number of coats of clear varnish, the greater will be the detraction from the purity of the black. So with white : a single thin coat of the palest varnish over a coat of pure white detracts slightly from its purity ; but successive coats of the most colorless varnish destroy the whiteness, and the surface reflects more or less of impure yellowish light. The same may be said of all the primary and secondary colors. Some of the mixed and broken colors would be improved, on the contrary, by a coating of yellowish translucent medium, as yellow-lake over drab, or over a mixed green. In avoidance

of these accidents, and in order to secure the best results possible in carriage-painting, we suggest the application of only one coat of clear varnish, and that, of course, the last one. We believe that the best work turned out of any city establishment is finished without a single coat of clear color (we speak now more particularly of glazing jobs), and with but one coat of clear varnish. In carmine and the lakes, the first coat on the ground is put on in varnish, and every coat up to the last is colored. In this way a depth of color is obtained which can be had by no other process. It should be borne in mind that the opaque or body colors do not compare in beauty and brilliancy with the transparent colors; and, as a rule, the colors are beautiful in proportion as they are transparent: for examples, ultramarine-blue, carmine, emerald-green, scarlet and crimson lakes, etc. All are familiar with the beautiful colors reflected from the vases placed in the windows of apothecary-shops. This results from the *depth* of colored fluid. A thin, flat glass vessel would not reflect such hues, though filled with the same substance. The principle is the same in carriage-painting: to show the best possible colors, the light must be reflected, not from a flat, opaque surface, but from a surface which has beneath it a depth of continuous colored particles reaching way down through the successive coats of varnish to the groundwork. To be sure, this mode of proceeding is expensive, both in labor and material; but who ever gained a good thing without working for it? Black should be put on in one coat of clear, flat color; after that, every coat of varnish should contain more or

less of the same black as used for the first coat, up to the finishing-coat, which should be clear varnish. In this mode the black holds its color, and does not take on the greenish tinge which otherwise it is impossible to avoid. All work, of course, is good or bad only by comparison. Any carriage is black enough in a dark night, and almost any tolerably good black looks well enough when viewed *per se*. It is only when placed in comparison with the best, that its inferiority is apparent; and men who strive to excel in their productions are not content to occupy inferior positions in any particular. “Excelsior!” is a good motto for coach-painters.

THE END.

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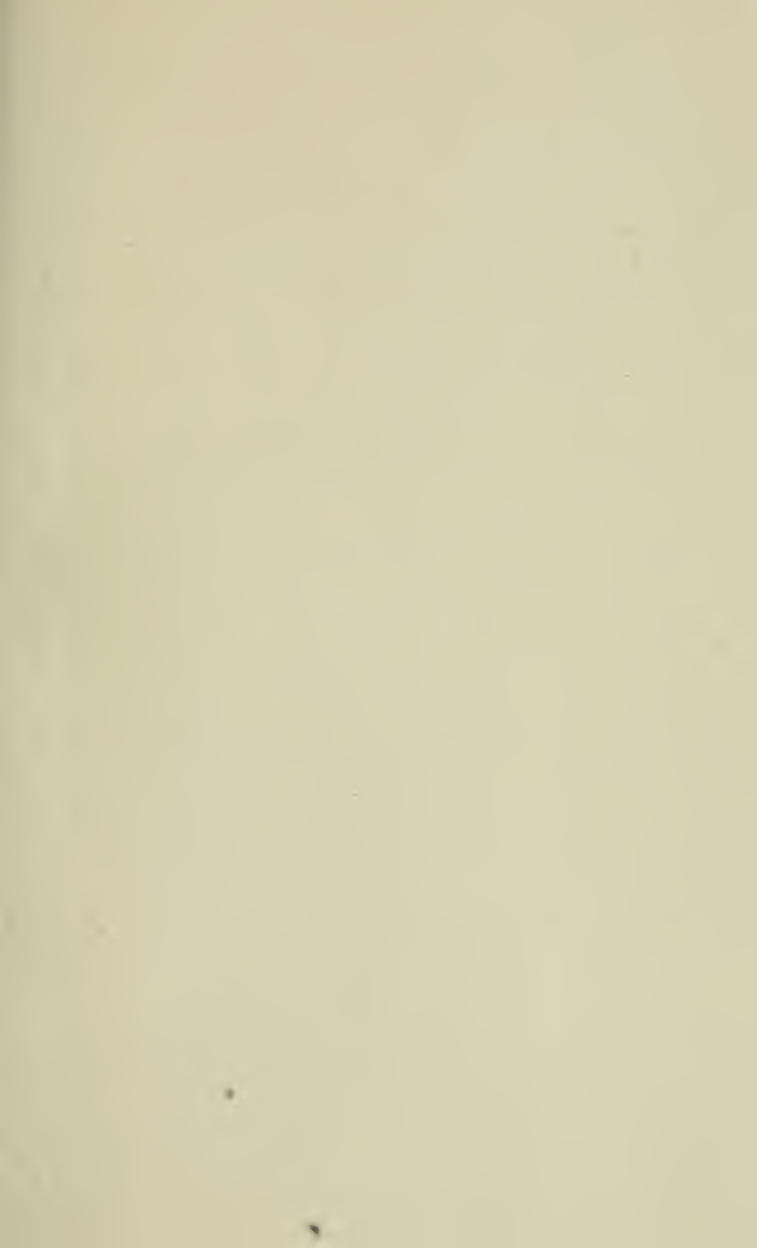
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